AMERICAN
Railroad Journal
·ESTABLISHED·1831·

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Railroad Notes.

WE invite railroad officers to send us notice of elections, transfers, appointments, resignations, etc.; and all our readers would oblige us by furnishing us with any items of news which may come to their knowledge and are of a suitable nature for our columns. It is our intention to publish monthly full and accurate information regarding those enterprises and industries to which the AMERICAN RAILROAD JOURNAL is devoted, and to effect this end we solicit the coöperation of readers interested therein. We aim specially to record all new railway enterprises in the United States and Canada, and to note the progress of construction on all new roads and extensions; and we request those concerned in railway building to give us early information concerning the above, that our reports may be as complete as possible.

THE Atchison, Topeka and Santa Fé Railroad Company has contracted to equip its freight trains with the Westinghouse automatic brake.

THE general passenger agent (Mr. Henry Monett) of the New York, West Shore & Buffalo, New York, Ontario & Western, Syracuse, Ontario & New York, and Wallkil Valley Railroad companies, has issued a circular announcing that on and after the third instant, the parlor car service between Jersey City and Washington, on trains 56 and 57 is discontinued. Parlor cars on these trains are run between New York and Albany.

MR. JOHN MCDONALD, has been appointed emigrant agent of the New York, West Shore & Buffalo Railway Company, with temporary headquarters at No. 24 State street, New York.

AN organization has been completed with the view to build a narrow-gauge railway between Denver and Memphis, and open an outlet east for the narrow-gauge system of the Rocky Mountains. The company was organized under the laws of Kansas, and is known as the Denver, Memphis and Atlantic Narrow-Gauge Railway Company. Its directory is as follows: Hon. M. Mercer, of Bailey, Coleman & Co., bankers and brokers, New York. Col. John Doniphan, president St. Joe, Kansas City and Arkansas Narrow-Gauge Railway, St. Joseph, Mo.; Major Jo. Hansen, vice-president St. Joe, Kansas City and Arkansas Narrow-Gauge Railway, St. Joseph, Mo.; ex-Gov. Wm. Gilpin, Denver, Col.; N. M. Jones, president First Nat. Bank, Memphis, Tenn.; H. M. Hansen, general agent Union Pacific ticket and passenger department, St. Joseph, Mo.; Patrick Murphy, president Miner's Bank, Joplin, Mo.; M. L. Read, banker, Winfield, Kans.; J. M. Endicott, M. D., Sedan, Kans.; Hon. J. C. Strang, Judge District Court, Larned, Kans.; W. C. Edwards, Register of Deeds, Larned, Kans.; H. P. Myton, Reg., U. S. Land Office, Garden City, Kans.; Col. S. S. Prouty, Pub., Sidney, Kans.; Thos. Donohue, banker, Belle Plaine, Kans., and J. J. Burns, P. M. and Pub., Belle Plaine, Kans.

THE Cleveland, Akron and Columbus Railroad claims to be the first in the world to adopt the twenty-four hours system of time. Day begins at midnight as now, and is continued up to twenty-four o'clock. Another innovation on the same road is the introduction of a system of weather signals now in use on the regular trains. These are said to be very valuable to farmers and others along the line of the road, and other railroad companies are considering the advisability of using them.

MR. BRADFORD DUNHAM has been appointed general manager on the Louisville and Nashville Railroad. He directs the operations of the transportation, mechanical and road departments office, at Louisville, Kentucky.

THE American Institute Fair, recently closed, was the best of late years; probably the best of any exhibition hitherto made by the Institute. It was largely attended. The machinery department was one of its best features.

THE official statement of the business of the Philadelphia and Reading Railroad and Coal and Iron Companies for October has been issued. The gross receipts of the railroad company were $3,531,436.21, and expenses, excluding interests and rentals, $1,630,477.68, leaving net earnings of $1,900,958.53, being an increase, as compared with the corresponding month of last year, of $77,407.08. This statement includes the following returns from the Central Railroad of New Jersey; gross receipts, $1,150,-248.20; working expenses, $544,783.11; earnings, $605,-465.09; rental for October, 1883, $534,322.07; profit for month, $71,143.02. The net receipts of the Philadelphia and Reading Coal and Iron Company for the month were $150,302.39, being a gain, as compared with the corresponding month last year, of $22,352.96.

THE report of the Secretary of the Interior (Mr. Henry M. Teller) for the fiscal year ending June 30, 1883, is an interesting document. Secretary Teller repeats what he said in his last previous report as to the necessity for some legislation in reference to lapsed railroad land grants; and recommends the "prompt and serious attention" of Congress to the subjects of the taxation of railroad lands and the titles to the same.

THE stockholders of the East Tennessee, Virginia, and Georgia Railroad Company met in annual session on the fourteenth ult., at Knoxville, Tenn. The annual reports show the revenue for the year from all sources to be $3,776,754, and the operating expenses $2,383,702, leaving a net revenue of $1,393,052. The number of miles of road operated is 1,086. There were represented at the meeting 227,209 shares of stock. The company has bought 100 acres of ground in the suburbs of Knoxville, on which railroad shops for the entire system of the East Tennessee, Virginia and Georgia Railroad will be erected. The shops now in the center of the city will be removed to the new location.

COL. C. O. SANDFORD, one of the oldest civil engineers in the South, died in Petersburg, Va., on the 29th ult., aged 73. He was born in New York State in 1811, but had lived in Virginia for many years. Under his direction that portion of the Norfolk and Western Railroad running from Petersburg to Lynchburg was built. He also supervised the building of the Augusta (Ga.) Canal and the railroad running from Chatham, Va., now composing part of the Raleigh and Augusta Air Line. In 1856 Col. Sandford was elected Superintendent of the Petersburg and Weldon Railroad, and in 1863 was elected President of the company. He subsequently resigned the office. His remains will be taken to Savannah, Ga., for burial.

THE new Board of Directors of the New York, Lake Erie and Western Railroad, have reëlected the old board of executive officers. An annual dividend of 6 per cent. on preferred stock was declared, payable Jan. 15. The books will close Dec. 20 and reopen Jan. 16.

THE statement of the business of all lines of the Pennsylvania Railroad Company east of Pittsburgh and Erie for October, 1883, as compared with the same month in 1882, shows an increase in gross earnings of $215,294, an increase in expenses of $30,856, an increase in net earnings of $178,438.

THE gap in the diagonal road between Des Moines and Marshalltown, Iowa, has been closed, and a junction effected with the Wabash track, which will be used until the track is laid into Des Moines. The new road is ninety-six miles long, and only lacks four miles of a connection with the Illinois Central, at Cedar Falls, which will be closed at once.

THE proposed extension from the McMinville and Sparta Branch of the Nashville and Chattanooga Railroad, at Sparta, to the Bon Air coal fields, will cost $20,000 per mile. No definite arrangements have been made by the coal company with the Nashville and Chattanooga road for the construction of the new line, but it will certainly be built.

THE gross earnings of the Norfolk and Western Railroad Company for October were $331,854, the expenses $139,903, and the net earnings $191,951, being an increase as compared with the corresponding months last year of $39,321.

AT the annual meeting of the Old Colony Railroad, held at Boston, on the 27th ult., the old board of directors were unanimously reëlected, as were also president Choate and vice-president Ames.

ALEXANDRIA, Va., Nov. 28.—The Board of Directors of the Norfolk and Western Railroad Company, met at Alexandria, Va., on the 28th ult. The company has had under consideration for some time the expediency of building warehouses, coal piers, etc., upon the property controlled by it at Lambert's Point, Norfolk; also extending its New River Division to open up new coal mines, and the building of branch lines into the important mineral districts adjacent to its line. The question of making financial provision to enable the company to undertake these works having been referred to a special committee, the meeting held to-day was for the purpose of receiving the report. The committee submitted a statement setting forth the beneficial results of the policy adopted by the company in building up its local industries, and reporting in favor of the further extensions and improvements that are now deemed requisite. In order to secure the necessary means, the committee recommended that the company issue $2,500,000 improvement and extension bonds, secured by a mortgage upon the property, and submitted a proposition to the company from a syndicate of bankers, headed by Messrs. Drexel & Co. and E. W. Clark & Co., of Philadelphia, for the purchase of the bonds on terms which it recommended should be accepted. The board unanimously concurred in the report and recommendations of the committee, the sale of the bonds was confirmed, and the President was authorized to undertake the work of construction and improvement.

HARRISBURG, Penn., Nov. 27.—A charter was granted on the 27th ult., at Harrisburg, Pa., to the Cherry Grove and Hickory Valley Railroad Company, the line of which will run from near Garfield, Warren County, to West Hickory, Forest County, a distance of twenty miles. The capital of the company is $120,000. L. R. Freeman, of Warren, is president.

BOSTON, Nov. 21.—The annual meeting of the Boston and Providence Railroad was held to-day, President Whitney presiding. The report of the Auditing Committee was accepted. W. G. Russell, J. Warren Smith, and H. F. Burrows, of Attleboro, were appointed on the Auditing Committee for the ensuing year, the last named being chosen to fill the vacancy caused by the death of J. A. Haws. The President explained that measures would be taken during the coming year to improve the terminal facilities at Providence. The election of Directors then took place, the whole number of votes cast being 55, and of shares represented, 4,809, all of which were for the following: Henry A. Whitney, Thomas P. J. Goddard, J. Huntington Walcott, William R. Robeson, Francis M. Welde, Joseph W. Balch, Royal C. Taft. At the close of the meeting the Directors re-elected the officers of last year.

BOSTON, Nov. 21.—The stockholders of the Little Rock and Fort Smith, and of the Mississippi River and Texas Railways are offered the right to purchase bonds and stock, which latter will be issued as full paid stock in the Little Rock Junction Railway and Bridge Company. The amount allotted to each company is $200,000 bonds and $200,000 stock. The proportionate amount which all the stockholders of each company have the right to subscribe for is approximately the one-twentieth part of the amount of stock held by each in the stock of either company.

RICHMOND, Va., Nov. 31.—The annual meeting of the stockholders of the Richmond, Fredericksburg and Potomac Railroad Company was held here to-day. President J. P. Brinton's report shows the gross revenues of the road to be $470,580; the expenditures $276,179, and the net revenue, after deducting the interest on the bonds and loans, and the dividends on the guaranteed stock, $102,-216, an excess over the net revenue last year or $25,376. The reports of the other officers show the road to be in a flourishing condition, financially and otherwise. Col. . P. Brinton was reëlected President, and the following Directors were elected: Charles Chauncey, A. Sydney Biddle, J. S. Blackburn, and Dr. F. T. Willis.

THE estimated earnings of the Elizabethtown, Lexington and Big Sandy Railroad Co., for the month of November, 1883, were $60,503.28; for corresponding period in 1882, $61,188.33, showing an increase in 1883 of $685.05. From January 1 to November 30, 1883, the increase over the corresponding period of 1882, was $181,796.32.

THE estimated earnings of the Chesapeake and Ohio Railway Co., for the month of November, 1883, were $335.-261,96; in 1882, 300,732.14; increase, $34,529.82. The earnings from January 1, 1883 to November 30, 1883, were $3,590,363.37, being an increase over the same period of 1882 of $508,742.18.

THE Philadelphia, Wilmington and Baltimore Railroad Company declared a semi-annual dividend of 4 per cent. on the 27th ult.

MEXICAN NOTES.

Gleaned from exchanges.

OUR railroad exchange, *The Mexican Financier*, reports that the railway companies find one of their greatest troubles in the stealing of the spikes that fasten the rails to the ties. The thieves have a way of prying out the spikes with levers, and sometimes rob a considerable piece of track of every spike. The rails are thus left loose, and should a train come along before the theft be detected it would surely be thrown from the track, bringing about a horrible disaster. The utmost vigilance in watching the track has to be maintained to prevent such an occurrence, but even the greatest care cannot always avail, for the thieving might be done just before the train comes along, leaving no time for the inspection of the track by the section hands.

THE same journal remarks on the results which will follow the development of the Mexican railway system. It anticipates a flourishing future for Aguascalientes, and proceeds to say: "Other cities at important railway junctions will become fine business points, while throughout the country the large towns along the railway lines will enjoy a flourishing growth as trade increases and industries are developed, through the impulse given by the quick and cheap communication afforded by the railways. And with the establishment of railway connection with the interior, the ports along the coast will increase in importance. Tampico, Túxpam, and Minatitlan on the Gulf, as well as Vera Cruz; and Guaymas, Mazatlan, Manzanillo, Acapulco and Tehuantepec on the Pacific, will all be seats of commerce, more or less large and important according to the nature of their lines of communication both at sea and ashore."

OUR contemporary is of opinion that the commercial supremacy of the capital city will be maintained, and thinks "it is likely that Guadalajara, surrounded by a rich and populous region, will continue the second commercial city of the Republic. There are indications that San Luis Potosí will also become a great business center, from the advantages which its accessibility from the Gulf over the Mexican Central's line from Tampico will give it, together with the junction with the same at that point of the main line of the Mexican National, and its branch to Zacatecas."

THE interesting journal to which we are indebted for our Mexican notes in the present issue, so far, reports that the main line of the Mexican National has reached the important city of San Miguel de Allende, in the State of Guanajuato, on its way from Acámbaro to San Luis Potosí. San Miguel de Allende has about forty thousand inhabitants, and considerable manufacturing is done there. The only station between Allende and Celaya is Soria, where a large factory, owned by Mr. Gonzalez, of Celay, is situated. Considerable business is expected at these two points. Work on construction will be suspended on this part of the line for the present, and it is thought that possibly hereafter all the building may be done down from the northern end, owing to the expense of transporting material to this end. It is expected that the junction with the Mexican Central at Celaya, instead of bringing the two roads into opposition at that point, will prove a great benefit to both, as they will be made mutual feeders to each other, bringing each other a large amount of business. It is likely that the project for a union station and freight depot at the junction, instead of the two stations now a considerable distance apart, will be realized.

ONCE more from the *Financier:* "The Mexican Central has settled the important question of water along its line between Chihuahua and Lerdo. At Lerdo water was reached at a depth of twenty-four feet, and at other stations at depths varying from 30 to 128 feet. All along the line of the road are millions of acres of finely grassed country, but hitherto deemed worthless for want of water. All that will have to be done now, however, to make them immensely valuable for stock-raising is to sink wells and put up wind-mills. The cattle-raising interests of Northern Mexico are destined to great importance."

AT the present rate of construction the two ends of the Mexican Central track will meet in January next.

THE *Chihuahua Enterprise* praises the efforts made by the southern States of Mexico to induce immigration. It says that the result is a settlement and development of the country in that section, of astonishing rapidity. The northern border States should make the same efforts and secure not only American but English and German emigrants to locate here. While Chihuahua is taking the lead in many things, in this direction she is behind her sister States.

THE total railway mileage of Mexico is 2,879 miles. It is mainly an extension of the railroad system of the United States.

VENNOR, the meteorologist, predicts that January will be warm. Prepare for Arctic weather.

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NEW YORK, DECEMBER, 1883.

Principal Contents of this Number.

The President's Message.

THE President has issued his annual message, and it is now before Congress and the people. It has been received on the whole, so far as we can learn, very kindly, and while some are ready to object to certain portions, yet taken in its entirety they are willing to concede that it is a thoughtful document.

The President's attention has undoubtedly been called to some of the schemes of certain railroad officials which seem to have given him serious thought. In his message therefore, we read the following words:—

Complaints have lately been numerous and urgent that certain corporations, controlling in whole or in part the facilities for the interstate carriage of persons and merchandise over the great railroads of the country, have resorted in their dealings with the public to divers measures unjust and oppressive in their character. In some instances the State governments have attacked and suppressed these evils, but in others they have been unable to afford adequate relief, because of the jurisdictional limitations which are imposed upon them by the federal constitution. The question how far the national government may lawfully interfere in the premises, and what, if any, supervision or control it ought to exercise, is one which merits your careful consideration. While we cannot fail to recognize the importance of the vast railway systems of the country and their great and beneficent influence upon the development of our material wealth, we should, on the other hand, remember that no individual and no corporation ought to be invested with absolute power over the interest of any other citizen or class of citizens. The right of these railway corporations to a fair and profitable return upon their investments, and to reasonable freedom in their regulations must be recognized; but it seems only just that, so far as its constitutional authority will permit, Congress should protect the people at large in their interstate traffic against acts of injustice which the State governments are powerless to prevent.

The President evidently realizes that the railroads of the United States have been instrumental in developing large tracts of country, and of adding largely to its resources. There can be no question in his mind but that the railroad has been the great civilizing power in the country, bridging time and distance by the iron horse so effectively that the continent is spanned inside of seven days. Whatever there is of good in the East, is thus rapidly brought in contact with what is good in the West, and this rapid interchange of people and ideas goes far toward eliminating the evil and increasing the good. But at this point we must stop, for in this great civilizing power itself the President finds cause for alarm. Of what then is this great power, so famous for developing the country and civilizing the people, guilty? There can be but one answer. They who are guilty at all, are guilty of robbing the country they have developed, and of robbing the people they have helped to civilize. We are well aware that the railroad power in these United States, with one exception, is the most far-reaching and successful in carrying out its desires. It is claimed in political circles that it can place a man on the bench of the Supreme Court, that it can have a majority in the halls of Congress, that it controls legislation in those States where its chief interests are centered, and sometimes even elects the Chief Magistrate of the nation. Now, if the above indictment is true, the charge of robbery must also be true, as to accomplish the above and pay dividends to stockholders requires more money than can be legitimately earned.

There can be various ways in which this robbery may be accomplished. Through their members of Congress they can receive large grants of land; through their legislators pecuniary aid from the different States through which their railways pass. They can place their bonds on the market, and when these are sold, place their preferred stock, and then their common stock. Or they can place their common stock at the same time they do the bonds, to be followed by the preferred stock. When all is placed that there is money to be invested in, it is an easy matter to default on the interest and foreclose the mortgage, and have the road sold to the highest bidder. By this method the stockholders who have invested their money are frozen out. We have heard it stated that this freezing out process has been successfully applied on several roads. Not having any personal knowledge, we do not claim that the railroad power is guilty of any of the above, but we simply state the above to show how easy a matter it is for the great developing power of our country and civilizer of our people to rob the National Government, State Governments, and the people collectively and individually.

We are glad for the words of our President calling attention to this power, and trust that good to the people and honest profit to the railroads may follow as the result.

BANKRUPTCY.

THE first session of the Forty-Eighth Congress has begun, and no doubt with plenty of work for it to accomplish. We have no desire to meddle with politics or religion, nor do we deem ourselves sufficiently wise to map out the work for the highest body in our land. We recognize the fact that life is not long enough to learn more than one trade well, and while we follow the avocation of journalists, we do not intend to set ourselves up as legislators. We can, however, so far as we know it, voice the sentiment of the people, and thus perhaps be of some service to those who are elected to frame our laws. We believe that we are giving utterance to the desire of the respectable part of the business world, when we ask the present Congress to give the United States a uniform Bankruptcy Act. There may have been a time when a uniform Bankruptcy act was not necessary, but that time is not now.

To-day the purchases of a buyer are not confined to any one State. He is in every market, and buys his goods where they are offered the cheapest, quality being the same. To-day a man's customers are not the residents of one State, but are scattered from the Atlantic to the Pacific, from the Lakes to the Gulf—in every State, county, city, town and hamlet where a traveling salesman or a circular can reach. Where trade is so extended it is impossible for a party doing a large business to protect himself in case of accident or fraud on the part of his customer, with the number and nature of the State Bankruptcy Laws now in force. In some States the creditor nearest to the bankrupt debtor can take advantage of the "grab" law and make himself whole, while the equally deserving far away creditors are obliged to take a few cents on the dollar. In other States a fraudulent debtor can fail, and by preferring his wife, father, uncle, or some other one in his ring, so cover his property that his creditors cannot touch it, and thus defraud them out of every cent, and under another name or his own name as agent, start in business again with his ill-gotten gains. Even thieves and cut-throats will acknowledge this to be a wrong state of affairs, even while they are willing to take advantage of it, and if this is so, the high-toned portion of the business community must be intensely shocked. It is now proposed to petition Congress to put an end to this condition of affairs by passing a uniform Bankruptcy bill. A large and influential body of men, composed of the ablest bankers and merchants in Boston and New York, have united to ask for the passage of what is known as the LOWELL Bill. This now well known Bankrupt Act was prepared a few years ago by the HON. JOHN LOWELL, United States Circuit Judge, and the years of study since given to it have only served to convince those who have given it this study, that we can do no better than have the same adopted as the Bankrupt Act of the whole country. It is impossible, with the flood of matter crowding for utterance in this JOURNAL, for us to spare the necessary space, or we would publish the Act in full for the benefit of our readers. Any party wishing a copy, however, can probably obtain the same by addressing the New York Board of Trade and Transportation, New York City. For the benefit of those who, like ourselves, are pressed for time, we will give an analysis of the Bill, as prepared by MORRIS S. WISE, ESQ., counsellor at law, New York City, in his explanatory note preceding his comparison between the Act of 1867, the LOWELL Bill, and the ENGLISH Act of 1883.

The interesting and valuable features of this Bill will be apparent on inspection; it overcomes the objectionable features of the late Act of 1867, and it has been most carefully drawn to avoid many of the intolerable evils which existed under the former law and which led to its repeal.

For instance: the abolition of the fee system of remunerating officials and their compensation by the payment of salaries will cause the expedition of the proceedings, which were formerly delayed intentionally to enable the officers in charge to enhance their fee bills.

The powers of the commissioners acting as ancillary judges have been enlarged for the accommodation and protection of suitors, especially in sparsely settled districts; and in those districts where the business does not warrant the maintaining of extra court machinery, the judge himself will perform the labor of the commissioner.

The trustees must account more expeditiously, and the estate must be wound up more rapidly than before.

No expenses can be incurred save by sanction of a committee of direction elected by the creditors.

The entire proceedings are placed under the watchful care of a new salaried officer, termed a supervisor, whose duty it is made to guard the interests of all concerned by detecting wrong doing or omission of duty, and reporting the same.

The composition clause may be studied with profit, and it will be found

to contain many novel and highly just, as well as practical arrangements, all tending to protect the rights of creditors as well as of honest debtors.

Discharges cannot be obtained in the easy, slipshod fashion that characterized them under the former law, and the section devoted to crimes and their punishment has been framed to successfully overcome the constitutional objections urged against the former provisions on the subject

In brief, the Lowell Bill has been drawn upon the just theory that the honest creditor should be protected, the dishonest debtor punished and the honest, though unfortunate one relieved from mercantile disaster, and restored to a position of usefulness in the business community. A perusal of this analysis will recommend the proposed law more efficaciously than any eulogium possibly can. The work has been performed by an experienced and able hand, and as such it is its own best eulogy.

THE CURRENCY.

THE rapid reduction of the public debt, which began some years ago, has now reached a point where it forces another problem on our attention, the question of our currency. For some years we have had the best system of supplying currency known to the people of the United States. The United States being borrowers, issued bonds for the money borrowed. The National Banks wishing currency, were obliged to buy these bonds, and then deposit them with the United States Government as security for their circulation. Thus for every dollar of circulation put out by a National Bank, the United States Government held ample security in its own bonds which were the bonds of the people, secured by the property of the people. The advantage of this system of currency over that issued by the old State Banks consists in the fact that a dollar bill from an Eastern bank is worth just as much out West as the bill of a Western bank, and vice versa. In a word, a dollar bill, no matter in what part of the United States the bank issuing it is situated, is worth a dollar in all parts of the United States. This was not the case in regard to the currency issued by State banks. The value of this currency varied according to locality; that issued in some localities depreciating five or more per cent., until we reached the grade denominated "wild cat."

Another advantage of the present over the former is, that a man never has to worry himself whether the currency in hand is the circulation of a sound bank, or one that has failed. The circulation being secured by a deposit of bonds at Washington, secures the holders of National currency against all losses, no matter how bad and rotten the bank issuing the same may be. In former days, when a State Bank failed, its circulating medium became worthless as such, and the unfortunate holder became a creditor of the bank, and in the process of liquidation might receive par or might receive a per cent. There are other reasons why we have an affection for the present system of currency, but if there were no other than the two above given, they are enough to make us pause when any prospect of a change is at hand.

The rapid reduction of the public debt has now brought us to the almost immediate prospect of a change in the currency system, and the great question is, what shall the change be? We certainly do not wish to go back to such a state of affairs as existed before the National currency, and we hardly know what other plan can be devised that will be an improvement on the present, or its equal. If we are certain that we do not wish a return of the old State Bank currency, we are just as certain that we do not wish to be loaded down with gold and silver coin. We want gold to be the standard medium, but much prefer to handle what represents it than the article itself.

For the public good, we hope that our wise men, when in Congress assembled, will devise some plan to relieve the banks and let the currency remain as it is, or else introduce some new circulating medium in the shape of Treasury notes. It will not hurt any one, except the owners of a few silver mines, if Congress will give us back our fractional currency as well. The people of the United States can get along without gold and silver better than with it, as long as they know that what they carry in their pocket-books will produce gold and silver on demand.

NOTHING remains to be said abont the change of time, of which all essential particulars have been already given. In New York, the lengthening of Sunday the eighteenth ult., by turning back the timepieces at noon, three minutes and fifty-eight seconds, gave watchmakers the opportunity of special advertising, and wits that of a new joke or two. To the traveling public, which indeed is the public at large, the innovation, affecting the almost entire railway system, is proving a great convenience. Greater simplicity in the arrangement of time is a step in advance, aptly characteristic of a progressive and busy people.

THE success which attended the Carnival Week in Montreal last January, and the enjoyment afforded by the Canadian winter sports as witnessed by thousands of visitors from all parts of the continent at that time, have induced the organization of very influential local committees to repeat the carnival this Winter. February 4 will be the first day of the week appropriated to this interesting festival, arrangements for which render it certain that the coming will exceed the past one in all its features.

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THE *Artisan*, Nashville, Tennessee, is perfectly welcome to whatever satisfaction it may derive from the fact that, by a slip of the pen, we did "locate" Nashville in Kentucky instead of in Tennessee.

Financial.

WE noticed during the month of November a moderate activity on the bull side in the stock market. This movement was however of short duration, and apparently has left the market in a duller condition than it was before. The month has certainly been one of easy money, so far as abundance and rates on approved collaterals are concerned. We believe that the crop movement, both in cotton and grain, has been quite large, and yet the necessary demands from the West and South to move crops has not been felt to any great extent here, or else we would find an increased rate on call loans.

There is no disputing the fact that money remains very abundant, not alone in the money centers of our own country, but in foreign countries as well. Men acquainted with the ruling passion of capitalists for gain, can account for this condition only by accepting one of two reasons: either the capitalist has become virtuous, or else has become thoroughly frightened. As we do not lean to the theory of the leopard changing his spots at will, we are obliged to accept the latter reason of the capitalist being thoroughly frightened. We see no good reason why he should not be frightened, when we take into account that for two or three years back there has been a gradual decline in the market price of his favorite securities. Many times during that period the financial articles in our daily papers have prophesied that the bottom was reached, and in less than six months after their prophecy, have been brought to face a price still lower. Many believe to-day that we are at the bottom; but who knows? All the prophecies of the past two years have been failures, and the prophecy that we are at low water mark to-day may be a failure also. We opine to the belief that the time to buy is on a rising market, and the time to sell is on a falling market. A man can afford to buy at a price above low water mark when the stock purchased is advancing in price. He certainly can afford to sell on the first turn of the stock downward, for in nine cases out of ten the first loss is the smallest. We notice that the banks are using a little extra caution in their dealing with their customers, when notes for discount are presented to them. This is natural, but when overdone exceedingly unwise. Because banks have been careless and become flooded with worthless paper, the makers of which have failed, is no reason why firms that are solvent should be denied their customary accommodation. Such a course is like locking the stable door after the horse has been stolen, and may result in producing more failures in cramping concerns that otherwise would remain solvent. We do not hesitate to pronounce this action on the part of some of the banks as being very unwise, and in some instances reprehensible. The true course for them to pursue is to be always careful, as institutions to whom are committed great trusts. If banks will discount for their own profit and their customers' legitimate wants, giving accommodation notes a wide berth, they will, in a term of years, make more money and have a less number of failures to disturb them.

We are informed on very good authority that some trades are complaining of an accumulation of stock on their hands. We have known for some time that many persons in business were buying only from hand to mouth, and it seems strange that in face of such an existing fact, any trade should go on and over-produce. The next step under these circumstances will be a reduction in wages or a stoppage of manufacturing. Then the country will be flooded with labor *vs.* capital literature, and strikes and lockouts will be the order of the day.

We cannot forecast the future, the gift of prophecy being denied us, but one thing we can solemnly affirm, that until confidence be restored the present condition of affairs cannot improve. As confidence is a plant of slow growth, and has been nipped so many times by railroad and mining ventures foisted on the community by men of good reputation but no character, we have the impression that the future for many of us will be uphill work.

Our Railways and Our Industries.

THE past thirty days have been perhaps the most important in the iron trade for two years. On Saturday, December 8th, the Homestead Steel Rail Mill, near Pittsburgh, closed down, and on December 15th, the Edgar Thomson Works will, according to announcement, follow suit. A rumor prevails, to the effect that one or two other mills will close down, owing to the lack of orders and the backwardness of railway builders in engaging in new enterprises at this time, or contracting for Spring and Summer deliveries. Heretofore it has been the custom of railway builders to contract ahead from six to nine months, but the conditions of the steel rail market, and the requirements of the country have so materially changed, that the policy of ordering for future delivery has been, to a great extent, discontinued. At present cost, there is but little profit at a selling price of $35. There are now inquiries in hand for upwards of 100,000 tons, and offers range from $30 to $34. But unless a further reduction in wages should be made, and more skilled labor dispensed with, it is not probable that rails will be sold below present asking prices for some little time to come. The rail making capacity is far in excess of the requirements now in sight. But a careful review of the projected mileage, shows that a large amount of railway material will be wanted next year. The dullness of the demand for rails for some time past is due more to the probability of a drop of $5 per ton in the price of rails, than to lack of requirements for the material. Transportation facilities are still required on a large scale. Within thirty days, announcements have been made of the contemplated construction of from 2,000 to 3,000 miles of road. Eight hundred miles of this is projected in the Southwest, through New Mexico and Colorado, for the purpose of developing a territory now devoid of railway facilities. A new line, which will, when completed, practically result in another trunk line, is proposed, between New York and Chicago, making the distance from the Hudson ferries to the Chicago Exposition, 806 miles, all except 260 miles of which is already finished and in operation from Chicago to Chicago Junction. The distance is 271 miles in a bee-line, with easy grades, by the Baltimore and Ohio. From Chicago Junction to Akron, O., the new road will be from sixty to sixty-five miles. From Akron to New Castle it is seventy-five miles, and from New Castle to Milton, on the Susquehanna, the western terminus of the Reading system, it is exactly 180 miles, but the road will be 200 miles long, on account of the topo-

graphy of the country. From Milton, by the Reading, it is 125 miles to Easton on the Delaware, and from Easton to Jersey City pier, seventy-five miles. This new road would be under the control of the B. & O. system, and come into competition with the Pennsylvania, the Erie, and other lines having a Chicago outlet. This fact is referred to simply as an indication that railway builders do not consider that the eight lines between New York and Chicago are too much; on the contrary, it is said that there are influential parties in railway circles who intend to build this additional line. Rumors of the same character are current as to the projected construction of lines in other localities in which, according to all appearances, there is but little need of additional facilities. Railway builders expect to obtain steel rails for next Summer's work at $30 per ton, and with a corresponding decline in other kinds of railway material and appliances, it would not be saying too much to assert that there would be considerable railway activity during the coming year, stimulated in part, by the low price of material, as well as by the natural and legitimate increase in traffic.

The iron trade throughout the country is dragging along slowly, uncertain whether to still further restrict, or to continue production, in view of the possibility of an improvement within ninety days. The iron trade is strong and confident; it has overcome many obstacles, and it has still great faith in the growth of the country; it looks for development North and South, and in the expanding requirements that must follow that growth. Hence, capital is ready to be invested, and only waits for a favorable opportunity to enter some of the many new enterprises looming up.

The mills engaged in making construction iron and iron for engineering purposes, are nearly all busily engaged, very few being short of orders, and a large amount of business is in sight. The bridge works are especially busy; locomotive works are doing a fair amount of work. Here and there rumors prevail as to declining activity and financial troubles. With finished iron at 1¾ to 2c. per lb., construction iron at 2¼ to 4c. per lb., steel rails at $30 to $35 per ton, pig iron at $17 to $20, and steel in proportion, it is quite reasonable to expect an earlier improvement than would be possible were it not for these very low prices.

The coal and coke interests are suffering very little as yet from the depressing influences at work in other directions. The anthracite coal interests have mined, so far this year, nearly 30,000,000 tons, but have found a nine to twelve days restriction a necessity, in order to prevent the weakening tendency which has been threatened in prices for a month past. The coal combination is strong, and able and determined to hold prices about where they now are. The policy of opening up new markets has strengthened prices, and will continue to do so. The bituminous coal fields are being developed with wonderful rapidity, but it is doubtful whether the capacity can be profitably engaged next year.

New roads are being pushed into mineral territory in Pennsylvania, Ohio, West Virginia, and through several of the Southern States, which will result, if in nothing else, in a gradual diversification of the industries which have been heretofore confined to Pennsylvania and Ohio. Blast furnaces are projected in Virginia, West Virginia, Tennessee and Alabama. The fact that large quantities of iron are being shipped from those States to Northern markets, in competition with Pennsylvania and Ohio irons, is warning capital that a new source of competition is at work, and this warning has been taken. Northern manufacturers are taking the bull by the horns, and investing money in Southern properties, mines and railways, and like the British manufacturers, transferred their capital to fields where it will be best able to compete with the new economic forces.

The American railway system is changing the conditions which control, stimulate, or depress the industries. This system is opening up opportunities in remote sections; manufacturing resources are being developed with a rapidity which is alarming to the conservative sentiments of those who have become, for generations past, accustomed to believe that Pennsylvania was the keystone State, not only in a political sense, but as a manufacturing center. It is no longer so. Alabama is rapidly coming to the front; Virginia will soon be a leading pig iron producer. Foundries, mills and shops are springing up all over the South. The textile interests are rapidly expanding their investments, and are still very strong, as shown by the dividends declared.

The substitution of coke for coal, and of natural gas for both of these, is making fresh possibilities, and opening up room for enterprise, through the resulting competition growing out of the economies developed; manufacturers at points remote from coke and natural gas fields, are considering the possibilities of obtaining natural gas fuel. The construction of pipe lines, from 100 to 300 miles in length is seriously contemplated, and after what has been accomplished in recent years, it is quite safe to say that some of these schemes for transporting natural gas long distances, will be realized within twelve months. The question of cost has not yet been practically determined, but sufficient inducement exists to warrant the investment of a large amount of money in these schemes.

IT is reported that the Dominion Government refuses, contrary to expectation, to guarantee three per cent. interest on the total capital stock of the Canadian Pacific. It has agreed to give twenty-five million dollars as a subsidy to the road, and a land grant of twenty-five million acres, and to exempt from taxation, forever, the real property and stock of the company. The reader will remember that the proposed terminal point of the road on the Pacific coast is Victoria, Vancouver's Island. In 1880 a contract was made by the Dominion Government with John S. Kennedy, of New York; Richard B. Angus and James J. Hill, of St. Paul, Minn.; Morton, Rose & Co., of London, and John Reinach & Co., of Paris, forming an incorporated company known as the Syndicate Construction Company, for the construction, ownership, and operation of the Canadian Pacific Railway. The company increased its capital stock from twenty-five million to one hundred million dollars, and a guarantee of three per cent. on this amount was asked of the Dominion Government, and, as is stated, has been refused. There is, however, a probability that a guarantee will be given up to a certain figure. If the above report should prove true, the completion of the line must be indefinitely postponed.

TO BE proud of learning, is the greatest ignorance.

Our Canadian Letter.

From Our Special Correspondent.

OTTAWA, December 4, 1883.

AS THE date fixed for the opening of the House of Commons, 17th prox., is fast approaching, numerous bills affecting railways are being entered at the office of the Clerk of the House.

The bondholders of the St. Lawrence and Ottawa Railway Company will apply to Parliament next session for an act enabling them to vote at all meetings of the shareholders, on the election of directors, and in the transaction of all other business upon which shareholders have a right to vote, and with or without the registration of such bonds; also to empower any judge of the High Court of Justice of Ontario, upon the application of bondholders to the extent of one-third of the amount of the total issue of such bonds, to order a sale of the whole of the property and undertaking of the company, and to vest in the purchaser all the franchises and statutory rights of the company, free from any lien or interest of the shareholders, and to vest in a receiver the money arising from such a sale, to be applied in payment of claims of bondholders, and the residue for the benefit of creditors and shareholders.

The Canadian Pacific Railway Company give notice that they will apply for power to purchase, construct and guarantee the securities of branch lines.

Hugh Sutherland and others of Winnipeg, will apply for assistance to incorporate the San Fancisco, Winnipeg and Hudson Bay Railroad Company.

The Railway Trust and Construction Company will apply for an amendment to their charter.

The Manitoba and Southwestern Railway Company will apply for an extension of the period for the construction of the road, and for authority to sell or lease it.

The Atlantic and Northwestern Railway Company will apply for sanction for its arrangements with the Canadian Pacific, and Ontario and Quebec Railway Company.

The Canadian Pacific is involved in two heavy legal suits. The celebrated case of McLaren *versus* this company, involving a hundred thousand dollars, is to be appealed by the defendants from the Supreme Court of Canada to the Privy Council of England. Allan Grant, an extensive lumberman, is suing this company for breach of contract. An argument in the case was concluded a few days ago at Osgoode Hall, Toronto. Decision reserved. Plaintiff last year contracted with the company to convey a large quantity of square timber from this city to Quebec, he to find men and the company cars for transhipment. Defendants neglected to furnish the cars at the time specified, and when the timber reached Quebec the market had fallen, whereby the plaintiff alleges that he lost over fifty thousand dollars. The claim was not allowed at the trial of the case here, and application is now made to set the judgment aside.

Much interest is manifested throughout Ontario in the construction of the Ontario and Quebec Railway, which will be opened for passenger traffic by May next. This new road, which is constructed by the C. P. R., will give that corporation a through line from Toronto to Montreal. The C. P. R., would, on completion of this new road, have an advantage over the Grand Trunk in point of distance, but the latter on the first of next month takes control, it is said, of the Midland Railway, which will put it on an equality with the C. P. R. The construction of the Midland is proceeding tardily.

The Kingston and Pembroke Railway, a new line running from the former place on the G. T. R. to Renfrew, on the C. P. R, passing through a valuable lumber and mineral country, will be completed next spring. It is now open for traffic as far as Calabogie Lake, a distance of twenty miles from the terminus.

The Jacques Cartier Railroad short line between Lachine and Montreal, will be completed next week.

The reports of the G. T. R. and C. P. R. entering into compact for better arrangements with regard to rates, has been denied by the former, but not by the latter. There is, however, a latent impression abroad that such arrangements have been entered into.

The final meeting of the Board of Directors of the Credit Valley Railway was held a few days since in Toronto, when an agreement was authorized to be executed; also the deed of amalgamation with the Ontario and Quebec Railway.

As the result of a recent test, the C. P. R. Co. is receiving regular supplies of coal from the Saskatchewan mines.

The C. P. R. syndicate is under a dark cloud as regards the northwestern division. A wholesale reduction in the wages of the employés has just been effected. Yesterday machinists were reduced forty cents per day; laborers, twenty cents; carpenters, thirty-five per cent per month. In the stores department laborers were reduced to $1.50 per day. Office hands, hertofore getting $55, only get $50 now. In consequence of the reduction, the boiler-makers went out on a strike, and a general strike is imminent. The plea of the syndicate for the reduction of wages is the tremendous outlay of expense and its meagre receipts. The reduction has not affected the Eastern division, where the receipts are large. At a convention of farmers of the Province of Manitoba, held at Brandon a short time ago, the syndicate and the Government came in for a severe overhauling, notwithstanding that representatives of the different political parties were present at the convention. At this gathering the Manitoba and Northwest Farmers' Union was organized. Besides denouncing the present customs tariff, the following resolutions were passed: "That the interests of the settlers of this Province peremptorily demand that the right which, under the R. N. A. Act, it possesses in common with every other Provence in the Dominion, of chartering companies to build lines of railway within its own bounds, should be exercised to its fullest extent. The baneful effects of railway monopoly call loudly for the active and persistent exercise of all the powers of the people to maintain their rights, and to resist to the utmost every act of arbitrary interference with them. That the natural outlet for the Province of Manitoba and the Northwest is through the Hudson's Bay, and the great rivers and lakes tributary to it. The feasibility of this route having been proved by two hundred years of constant navigation by the ships of the Hudson's Bay Company, and by the voyages of the New England whalers for the last thirty years, the interest of the Northwest demands the construction at an early date of a railway connecting the present railway system with a port in the Hudson's Bay. To attain this object it is the

duty of the Dominion Government to grant the most liberal assistance.

"That we feel the present arrangement presented by the C. P. R. for the shipment of grain, an exceedingly unsatisfactory one, and highly detrimental to the farmers and to grain buyers of limited means, inasmuch as the C. P. R. prohibits the erection of any elevators but those of costly description that involve the investment of considerable money, thereby placing the shipment of grain in the hands of a few capitalists."

The concluding resolutions were read:

"That, failing to secure any of the above, we petition to be released from Confederation;

"That in the event of the latter alternative being a failure, we take such steps as may be thought advisable for becoming an independent Province."

Chicago and Northwestern Railway.

THE earnings of the Chicago and Northwestern Railway Company for the years ending May 31, 1882 and 1883, were as follows:

	1882.	1883.
From first-class passengers	$ 3,353,768 63	$ 3,802,737 56
From second-class passengers	712,582 15	885,132 87
From excursion passengers	786,888 94	1,063,068 73
From commutation passengers	308,159 82	352,274 79
From parlor cars	10,023 65	16,401 80
From freight	17,393,098 17	16,749,055 51
From transportation of milk	132,036 02	145,296 24
From express matter	361,547 99	411,600 19
From United States mail	431,584 19	421,150 44
From extra baggage	34,497 57	48,091 75
From miscellaneous	160,469 06	187,024 44
Total earnings	$23,684,656 19	$24,081,834 32
Operating expenses:		
Repairs of roadway and track	$2,518,320 34	$2,278,838 75
Repairs of bridges, culverts, etc	440,408 70	552,739 95
Repairs of buildings, fences, etc	615,690 61	541,416 52
Repairs of locomotives	805,852 58	928,467 54
Repairs of passenger cars	285,897 10	510,744 33
Repairs of freight cars	694,390 91	882,887 60
Telegraph expenses	221,322 93	281,047 02
Agents, clerks and laborers	1,734,346 97	1,867,641 95
Passenger conductors, baggagemen and brakemen	214,193 25	267,003 57
Freight conductors and brakemen	548,037 24	608,257 36
Engineers, firemen, wipers, etc	1,194,013 10	1,331,613 48
Salaries of general officers and clerks	147,558 27	152,614 80
Outside agents	98,932 73	135,895 31
Advertising	68,881 49	80,259 62
Fuel for locomotives	1,598,382 97	1,937,295 05
Oil, waste and tallow	188,925 51	215,670 41
Water supply	78,173 86	90,718 87
Passenger train supplies	38,453 45	55,621 02
Freight train supplies	22,180 11	26,511 68
Station supplies	68,245 00	101,594 61
Stationery and printing	105,612 09	109,607 92
Contingencies and miscellaneous	109,048 20	111,571 35
Loss and damage	205,514 26	207,177 77
Insurance	837 50	941 78
Law expenses	55,267 62	64,506 28
Mileage of passenger cars	7,696 85	8,105 86
Mileage of freight cars	50,892 08	104,380 84
Taxes	522,558 39	618,785 12
Total operating expenses and taxes	$12,639,634 11	$14,072,516 36
Net earnings	$11,045,022 08	$10,009,317 96
From which deduct:		
Interest on bonds	$3,999,208 94	$4,288,633 05
Sinking fund accounts	98,120 00	98,120 00
Rent of leased lines	1,569,618 00	1,570,948 27
	$5,666,946 94	$5,957,701 32
Net income	$5,378,075 14	$4,051,616 64
During the fiscal year ending May 31, 1883, four quarterly dividends of 2 per cent. each on the preferred, and two semi-annual dividends of 3½ per cent. each on the common stock were paid, amounting to		2,890,336 52
Leaving a surplus of		$1,161,280 12
The balance of income account on the 31st of May, 1882, was		7,264,581 51
Total to credit of income account, May 31, 1883		$8,425,861 63

The net earnings of the year were 10.34 per cent. on both kinds of stock, and the large surplus, after payment of current dividends, was expended in promoting the value and efficiency of the property.

Compared with the previous year, there was an increase in gross earnings from passenger business of $948,192.56, from express $50,052.20, and from miscellaneous $40,149.56; with a decrease in earnings from freight of $630,782.44, and from mails of $10,433.75—making the total increase $397,178.13. The increase in operating expenses was $1,336,655.72, in taxes $96.226.73, in interest on bonds $289,424.11, and in rental of leased lines $1,330.27—a total of $1,723,636.63. The decrease in net income was therefore $1,326,458.50.

The ratio of operating expenses to earnings was 55.87 per cent., and, including taxes, 58.44 per cent., against 51.16 and 53.37 respectively for the preceding year.

An examination of the traffic of the different divisions of the road show that there was an increase from the Madison, Winona and St. Peter, Dakota and Northern Iowa divisions of $1,515,419.06; while there was a decrease in the earnings of the Wisconsin, Peninsula, Galena and Iowa divisions of $1,118,240.93; the difference ($397,178.13) constituting the gain in total gross earnings.

The favorable increase in traffic on the new roads in Dakota, and the main lines leading thereto, and on the Northern Iowa division, as shown above, is attributed to the active settlement and development of the cheap lands of the Northwest.

The increase in operating expenses, which, it will be observed, is almost identical with the decrease in net earnings, was caused by the additional number of miles of road operated, and by the unusual severity of the winter on some of the lines. The item of taxes shows an increase of 18.41 per cent.—which, the report says, is "an additional burden imposed by public authority, but not justified by the results of the year."

During the year ending May 31, 1883, there were constructed 39.79 miles of the Menominee River Railway, 43.30 miles of the Escanaba and Lake Superior Railway, and 6.71 miles of the Galesville and Mississippi River Railway, making 89.80 miles, all of which has since become a part of the Chicago and Northwestern Railway proper by consolidation and purchase. There were also constructed 78.22 miles of the Toledo and Northwestern Railway in Iowa, and 107.02 miles of the Dakota Central Railway in Dakota, making 185.24 miles of additional proprietary lines. Also 31.50 miles of the Maple River Railroad, the same being an extension of one of the leased lines in Iowa, built by the Maple River Railroad Company.

The aggregate number of miles of road in use at the end of the year was 3,584.10, against 3,278.22 miles at the end of the previous year, an increase of 305.88 miles, or 9.3 per cent.; and the average number of miles operated during the year, 3,464.70, against 3,032.90 during the preceding year, an increase of 431.80, or 14.2 per cent.

The average gross earnings per mile of road operated in 1883 were $6,950.63, against $7,809.24 in 1882; the average expenses and taxes $4,061.69, against $4,167.51; and the average net earnings $2,888.94, against $3,641.73.

The total earnings from passengers in 1883 were $6,119,615.75, against $5,171,423.19 in 1882, an increase of $948,192.56, or 18.33 per cent. Of this gain, $455,347.08 was from first class, $172,550.72 from second class and emigrants, $276,179.79 from excursion, and $44,114.97 from

commutation. The total earnings from freight were $16,-894,351.75, against $17,525,134.19 in 1882, a decrease of $630,782.44, or 3.6 per cent. The earnings derived from the transportation of material chargeable to construction of new lines were $230,205.44, or 1.36 per cent. In express and miscellaneous traffic there is a gratifying increase. The mail service shows an apparent decrease of $10,433.75, arising from back pay and balances of the Post Office Department found due on old and new routes, and from deductions affecting the comparative revenue of the two years. The real increase was $46,016.03, while the difference in the above items from the previous year was $56,-449.78.

The number of passengers carried in 1883 was 7,968,560, against 6,754,717 in 1882, an increase of 1,213,843, or 17.97 per cent.; the number carried one mile was 248,856,303, against 205,574,178, an increase of 43,282,125, or 21.05 per cent; the average rate per passenger per mile was 2.46 cents, against 2.52 cents, a decrease of 2.38 per cent. This decrease, applied to the whole movement, is equal to $151,563.08 total reduction in fares from the previous year's rates. The average number of miles each passenger was carried was 31.23 against 30.43 in 1882.

The number of tons of freight carried in 1883 was 7,-874,665, against 8,190,893 in 1882, a decrease of 316,228, or 3.86 per cent.; the number of tons carried one mile was 1,183,829,358, against 1,192,188,039, a decrease of 8,358,681, or 0.70 per cent.; the earnings per ton per mile were 1.42 cent, against 1.47 cent, a decrease of 3.40 per cent. The decrease in revenue from freight caused by the lower rates was equal to $507,939.81 for the year. The average number of miles each ton was carried was 150.33 against 145.55 in 1882.

At the commencement of the year the company had 558 locomotives, and at its close 578. The number of miles run by engines with passenger trains was 4,913,507; with freight trains, 9,770,415; with gravel trains, 1,267,108; with wood trains, 17,708; switching, 4,063,158—total, 20,031,896, against 18,157,257 in 1882, an increase of 1,874,639. The total cost of service, including repairs, wages of enginemen, firemen and w pers, fuel, oil, waste and tallow was for the year $4,342,896.94, against $3,723,375.60 for the previous year, an increase of $619,521.34; and the cost in cents per mile run 21.68, against 20.51 in 1882. The number of miles run to ton of coal or cord of wood was 28.13; to pint of oil, 7.36; to pound of waste, 112.49.

The car equipment at the close of the year (there having been added during the year 38 first class and 10 second class passenger, 8 baggage and express, 3 mail, 1 officers', 38 caboose, 3 freight, 200 coal and 2 pile-driving cars) consisted of 244 first class and 39 second class passenger, 7 parlor, 6 dining, 107 baggage and express, 21 mail, 5 paymasters', directors', etc., 282 caboose, 18 boarding, 10,143 box freight, 450 gondola, 2,204 platform, 1,435 live stock, 3,857 iron ore, 25 dump, 40 ditching, and 24 pile-driving and wrecking cars—a total of 18,907, after deducting 45 platform and 1 stock car destroyed. The whole number of cars in use at the close of the previous year was 18,650. The total mileage of passenger cars was 22,771,997, against 19,801,642; and of freight cars (loaded and empty) 187,-411,933, against 194,547,302.

During the year 18 locomotives, 20 first class passenger, 2 baggage, 100 box freight, 30 live stock, 132 platform, 10 caboose, and 135 ore cars were rebuilt in the company's shops, and the cost charged to operating expenses. The equipment has been fully maintained, and in respect to passenger service has been greatly enlarged and improved. Contracts had also been made for a large number of freight cars, which were to have been added in time for the fall traffic.

The whole sum expended for maintenance, and charged to operating, for materials and labor upon track, bridges, roadway, road-fences, crossings, etc., for the year was $3,-952,347.68. Included in the cost of track renewals and repairs are 11,154 tons of steel rails, 39 tons rerolled iron rails, and 36,362 iron and steel rails repaired and relaid; 758,244 cross-ties, 25,038 splice bars, 133,115 angle bars, 380,957 nut locks, 6,421 kegs spikes, 2,695 kegs track bolts, and 111 switches. The expenditure for these items amounted to $1,325,816.13, including $242,227.40 for ballasting track, raising grades, and enlarging and deepening ditches. The number of miles of track on the old and new lines laid with steel at the close of the fiscal year 1882-'83 was 2,783.17, or 77.65 per cent. of the whole. The increase in steel track during the year was 375.45 miles.

During the year $442,538.63 were expended in the construction of 67 miles of additional side track; $86,191.96 for right of way, etc.; $204,523.15 for new structures, such as station buildings, engine houses, stock yards, etc.; $24,-809.47 for second main track between Clybourn Place and Evanston; $11,449.47 on West Chicago shops; $4,166.66 for account of Union Elevator at Council Bluffs; $105,-759.77 for fences, road crossings, etc.; $227,612.89 for permanent bridges, culverts, etc.; $96,535.28 for grading, ballasting, etc.; and $96,171.39 for engine and car service, engineering, telegraph lines, etc., amounting in the aggregate to $1,299,758.67. There was also expended the further sum of $3,560,295.48 for account of construction as follows: Extension of Menominee River Railroad from Florence, $519,984.75; Escanaba and Lake Superior Railroad, $295,977.89; extension of Aurora Branch Railroad, $95,272.23; Galesville and Mississippi River Railroad, $47,161.01; Mineral extension to Smith mine, $6,369.10; Des Moines and Minneapolis Railroad, $96,756.48; Toledo and Northwestern Railway, $1,035,117.05; Dakota Central Railway, $1,079,939.02; Chicago, Milwaukee and Northwestern Railway, $345,406.04; Consolidation Coal Co. and Western Town Lot Co., $38,211.91. In addition to which $643,722.82 was expended for new engines and cars, making the total sum of $5,503,776.97; from which should be deducted $833,943.86 for premium on bonds and stocks sold, and for sundry construction credits—leaving $4,669,-833.11 as the net outlay for construction, equipment and new railroads during the year.

The extension of the Menominee River Railroad from north of Florence was continued during the year to Crystal Falls and the Iron River District, and to various mine openings, in all a distance of 39.79 miles; and the Escanaba and Lake Superior branch and mine extensions were also completed for a distance of 43.30 miles. The consolidation of these roads with the Chicago and Northwestern Railway, which was authorized by the stockholders at their annual meeting in June, 1882, was fully consummated at the adjourned meeting of the stockholders of the respective companies held on the 14th of September following—the common stock of this company being issued in exchange for the entire capital stock of the two Michigan companies, amounting to 16,200 shares. By this action

all the proprietary lines in Michigan have become a part of the Chicago and Northwestern Railway.

The Galesville and Mississippi River Railway, which was constructed during the year from Trempealeau station to Galesville, Wis., a distance of 6.71 miles, and the Rock River Railway, extending from Janesville to Afton, 6 miles, both of which were proprietary lines, have been transferred to this company, the consideration being the assumption of their bonds and their nominal liabilities, representing the first cost of the properties. The absorption of these branches was authorized at the annual meeting of the stockholders in June, 1883. No capital stock was issued therefor.

The Elgin and State Line Railway, and the Chicago, Milwaukee and Northwestern Railway, which constituted the remainder of the proprietary lines in Wisconsin, with a small portion thereof extending into Illinois, have also been consolidated with this company, the necessary action having been had at the annual meeting of the stockholders in Chicago on the 7th of June, 1883, at an adjourned meeting on the same day at Milwaukee, and at the special meeting at Menominee, Michigan, on the day following. The amount of common stock of this company issued in exchange for the capital stocks of the two companies is 97,651 shares; but it having been issued subsequent to the writing up of the accounts of the last fiscal year, does not appear as capital stock outstanding in the annexed balance sheet.

The Toledo and Northwestern Railway was completed during the year to a junction with the Des Moines and Minneapolis line, 1.75 miles, and to the Sioux River at Hawarden, 76.45 miles, where it connects with the Southeastern division of the Dakota Central Railway; the latter line extends thence for 125 miles northwesterly through Southeastern Dakota to Iroquois, a station on the main route of the Dakota Central Railway leading to Pierre, on the Missouri River. Through this road connections are formed east and south between the Dakota system and the Iowa lines of the Chicago and Northwestern, and the Chicago, St. Paul, Minneapolis and Omaha Railway Companies.

The extension of the Dakota Central Railway from the terminus of the Winona and St. Peter line at Watertown to Redfield, on the James River line, 71 miles, was completed last fall; an extension of 5.47 miles was also made of the James River Valley line from Ordway to Columbia; and another extension of 30.55 miles was built up the Valley of the Big Sioux River.

The Maple River Railroad extension, 31½ miles, which was built westward from Sac City, Iowa, by the Maple River Railroad Company, is operated under a favorable lease in connection with the older leased line of that company.

About 75 miles of the narrow-gauge portion of the Chicago, Milwaukee and Northwestern Railway, west and south of Montford, to Galena, were changed to standard gauge, and laid with steel rails.

On the 16th of December last, this company assumed control of the Chicago, St. Paul, Minneapolis and Omaha Railway, having previously purchased a majority of the capital stock, both common and preferred, of that company. The purchase consisted of 93,200 shares common, and 53,800 shares preferred stock, the same to be delivered and payment therefor made during the summer of 1883. The cost of this stock, including interest up to the date of delivery, amounted to $10,503,959.90; the payment of the greater portion of which was provided for by the issue and sale of $10,000,000 five per cent. fifty-year debenture bonds of this company, $1,500,000 of which were delivered within the last fiscal year, and are included in the bonded debt as given in the annexed balance sheet. The residue of the bonds have been delivered since the close of the fiscal year. The balance of the purchase money was derived from the sale of a portion of the common stock of this company, issued in consolidation of the two Michigan roads. The stock of the Chicago, St. Paul, Minneapolis and Omaha Railway Company is now held as one of the assets of this company, and three quarterly dividends have been received on the preferred shares since the purchase.

At the time of the purchase, in November, 1882, the system embraced in the Chicago, St. Paul, Minneapolis and Omaha Railway covered 1,147 miles of well equipped road, extending from Minneapolis and St. Paul southeast to a connection with this company's road at Elroy; northwardly to Bayfield and Superior City; southwesterly to Sioux City, Eastern Nebraska, Omaha and the Union Pacific Railway, and by its southern connection at the Iowa State line, opened to the Toledo and Northwestern Railway and all the Iowa roads of this company direct communication for the interchanging transportation of grain, cattle, coal, lumber and other products of Iowa and Minnesota; the company had other extensions and branches, as well as valuable land grants attaching to its Wisconsin lines, whose future development in the lumber interest must afford a large accession of traffic. Under its former management the property of the company had been much improved and enlarged, and some of its lines had become indispensable, and others greatly necessary to the completeness of this company's system in the northwest.

All the business of the Chicago and Northwestern Railway Company between Chicago, St. Paul and Minneapolis flowed through this channel, and by it connections were secured with the Manitoba, Northern Pacific and Canadian Pacific lines; its northern branches penetrated the best timbered regions of Wisconsin, and reached out to Lake Superior; and its southwestern and southern extensions from Minneapolis gave to the productive wheat regions of the Winona and St. Paul and Dakota Central Railroads easy access, on short hauls, to the unrivaled markets and milling facilities of that city. It is believed that the control of the Chicago, St. Paul, Minneapolis and Omaha Railroad secures advantages of great importance to the stockholders of the two companies, and is in the interest of public convenience, economy and sound corporate policy.

The common stock and scrip of the company at the close of the fiscal year was $16,851,265.97, of which $621,350.32 was owned by the company; and the preferred stock and scrip $22,324,454.56, of which $1,264.56 was owned by the company—the total amount being $39,175,720.53 against $37,328,500.53 at the commencement of the year, an increase of $1,847,220, viz: $1,620,000 issued in consolidation of the Menominee River Railroad Company and the Escanaba and Lake Superior Railway Company of Michigan; $227,000 for conversion of Peninsula Railroad bonds; and $220 in retiring old Galena and Chicago Union Railroad stock.

The total amount of bonds issued during the year was

$5,808,000, and the total amount retired $235,000—leaving the net increase $5,573,000, and making the aggregate bonded debt at the close of the year (including $592,000 live bonds in the sinking fund) $69.821,000, of which $43,874,000 are currency and $25,947,000 gold bonds. The aggregate bonded debt at the close of the previous year was $64,248,000.

From the report of the Land Commissioner, we learn that the total quantity of land in the various land grants on the 31st of May, 1882, was 2,178,281.35 acres; that 286,976.08 acres were deeded, and that 244,109.39 acres and 3,428 town lots were sold during the year, partly on time and partly for cash, for the consideration of $1,205.546.43. The cash receipts of the Land Department, from all sources, land sales, collections on contracts, interest, stumpage, etc., amounted to $1,026,444.10, which is not included in the railroad earnings of the company. The amount of land sold under contracts of future maturity is 387,399½ acres, and the amount remaining in all the grants, inclusive of these sales, on the 31st of May, 1883, was 1,977,736.14 acres.

CONDENSATION OF GENERAL BALANCE SHEETS, MAY 31,

	1882.	1883.
Roads and equipment	$131,419,070 82	$136,088,903 93
Trustees of sinking funds	1,321,000 00	1,525,000 00
Bonds on hand	828.600 00	839,000 00
Cost of securities proprietary companies	37,219 31	2,074,219 31
Outside real estate in Chicago	200,000 00	200,000 00
Materials and fuel on hand	2,291,340 46	2,526,482 48
Due from U. S. Government, express companies, agents and others	1,215,358 47	1,169,053 86
Bills receivable	66,674 16	76,864 73
Cash	1,760,608 02	2,710,496 85
Total	$139,139,871 24	$147,210,021 16
Capital stock—common	$15,095,924 37	$16,229,915 65
Capital stock—preferred	22,153,118 72	22,323,190 00
Capital stock—proprietary roads	22,883,150 00	22,463,400 00
Bonded debt	64,248,000 00	69,821,000 00
Bonds purchased with Winona and St. Peter Railroad Land Grant funds and canceled	366,000 00	460,000 00
Sinking funds paid	1,321,000 00	1,525,000 00
General consolidated gold bonds unsold	407,000 00	284,000 00
Notes of Consolidation Coal Company for coal lands, maturing in 1891	.....	300,000 00
Material, fuel, etc., bills for May	1,309,491 03	1,043,022 88
Current pay rolls	831,819 61	922,630 72
Unpresented coupons, old dividends, etc	74,829 85	82,668 49
Accrued interest, not due	675,430 00	675,395 00
Dividends declared, not due	971,184 50	1,023,406 50
Accrued rental of roads in Iowa, not due	439,934 80	530,363 93
Balance due to railroad companies	4,098 47	66,601 48
Notes and mortgages on real estate, etc	404,774 10	.....
Land income accounts	689,534 28	1,033,564 88
Railroad income account, surplus	7,264,581 52	8,425,861 63
Total, as above	$139,139,871 24	$147.210,021 16

President—ALBERT KEEP.

Directors—Augustus Schell, Chauncey M. Depew, Samuel F. Barger, F. W. Vanderbilt, D. O. Mills, Jay Gould, Sidney Dillon, C. J. Osborn, A. G. Dulman, R. P. Flower, John M. Burke, M. L. Sykes, New York; Wm. L. Scott, Erie, Pa.; Albert Keep, Marvin Hughitt, Anson Stager, N. K. Fairbank, Chicago, Ill.

Vice-Pres't, Sec'y and Treasurer—M. L. SYKES.

Ass't Sec'y and Ass't Treasurer—S. O. HOWE.

Second Vice-Pres't and Gen'l Manager—MARVIN HUGHITT.

General Superintendent—J. D. LAYNG.

Purchasing Agent—R. W. HAMER.

General Passenger Agent—W. H. STENNETT.

STEEL nails can be driven into the hardest wood without boring, it is said, going even into white oak knots, without bending. The price of them is about one dollar per keg higher than that of iron nails.

The New Niagara Bridge.

ON the 22d ult. was completed another magnificent achievement in engineering, namely, binding the opposite shores of the Niagara River by the new Michigan Central cantilever, which will be formally opened towards the end of the present month with imposing ceremonies. The structure is light, airy and graceful. Its ends rest on towers built up from the very verge of the rapids, but so light that the spectator finds it hard to realize that this latter graceful structure is strong enough to support the weight of a heavy railroad train. Superintendent Ryland has been the main working spirit of the enterprise, and the fact that the "travelers," by which the construction of the bridge has been so much facilitated, are his invention, shows his efficiency. General George S. Field first conceived the idea of spanning the Niagara with a cantilever bridge, and his plans were accepted. His energy has contributed largely to the success of the experiment. The bridge rests upon solid abutments, built up at the water-line. The top of the stone foundations are fifty feet above the water level, and from these the steel towers supporting the cantilevers rise 130 feet. From the tower foundations up the whole bridge is of steel, every inch of which has been subjected to the most rigid tests, from the time it left the ore to the time it entered the structure. Between the towers is a clear span of 490 feet over the river—the longest double track span in the world. The shore arm of each cantilever having been built and anchored, the others to span the river were constructed in sections of twenty-five feet, the whole being made self-sustaining as each section was added. The ends of the cantilevers reach only 370 feet beyond the towers, which left a gap of 120 feet to be filled. This vacuum has been supplied by an ordinary truss bridge, which has been swung into place, and rests on the ends of the cantilevers. Here provision is made for expansion and contraction by allowing play between the ends of the truss bridge and the cantilevers. At the same time the bridge is thoroughly braced to prevent danger from the lateral pressure of the wind. The total length of the structure is 895 feet. It will have a double track, and will be strong enough to bear two of the heaviest freight trains extending its entire length, and under a side pressure of wind of seventy-five miles per hour, and even then it will be strained to only one-fifth of its whole strength.

THE fifty-second exhibition of the American Institute, New York, was probably the best, so far; certainly the best of recent years. It was largely attended by persons intelligent enough to appreciate its many features of instruction and enjoyment. The machinery department contained many exhibits of interest.

CARTON-PIERRE.—This material is a compound of paper pulp and plaster of Paris. It is said to be very tough, strong, plastic, and light, and practically fire-proof. A contemporary recommends its use in paneling cars; and states that there was a factory in Philadelphia, some few years ago, which made pillars, moldings, etc., of *carton-pierre*, in addition to its regular business of making dolls' heads of the same material.

NARROWNESS of mind is often the cause of obstinacy; we do not easily believe beyond what we see.

Communications.

Editor American Railroad Journal:

One frequently hears, now-a-days, of the superiority of passenger car floor-framing over the former style, to resist the force of collisions and smash-ups in general. As is well known, the present style of floor-framing is the use of intermediate sills running lengthwise of the car, while the old style consisted of cross timbers, running crosswise of the car. It is claimed that the latter plan allows of a colliding engine entering like a wedge between the two outside sills, as the cross timbers afford no resistance, breaking like matches, and that the modern plan, as it presents the ends of the intermediate sills to the shock, will prevent the engine from entering the body of the car to a greater extent than the old plan. In practice, however, these claims are not substantiated, as a recent accident on the C. B. and Q. R. R. has amply demonstrated. It appears that a passenger train slowed up to pick up a flagman who had been sent out to hold it, and was run into from the back end by a freight engine and train following. The freight engine crushed its way into the last car of the passenger train its entire length, the front flue-sheet of the freight engine being broken in, probably by the ends of the intermediate sills, which thus proved a source of further calamity, as the broken flue-sheet allowed the steam and water to escape in large volumes into the car, suffocating and scalding those who might have escaped the mere collision. It looks probable that if the breaking of the flue-sheet was due to the intermediate sills, the old plan of cross-framing would have prevented this feature of the accident.

It is, of course, impossible to so frame a car that a colliding engine cannot crush its way into it, and to attempt this is useless; while it is equally plain that if the old plan is less liable to knock holes in the boiler than the new, the former is superior, so far as this goes. Accidents of this character will occur as long as railroads exist, and an inquiry into the extent or influence of the floor-framing in increasing the horrors of a collision would seem to be in order.

OLD-TIME CAR BUILDER.

Editor American Railroad Journal:

The value of a comparfson between the performance and cost of maintenance of locomotives on different lines of roads is fully appreciated by those interested in the matter, but the entire worthlessness of such comparisons as at present made, does not appear to be generally understood, or the cost of printing performance sheets, for the purpose of exchanging and comparing with similar sheets of other roads, would not be incurred by so many roads, in the management of which the severest economy is exercised. A dry-goods merchant in New York City would not value the information a pin's worth that it was costing him twice or half as much to sell a dollar's worth of goods, as a similar merchant located in Syracuse, N. Y. Outside of the mere fact that they are both merchants and both engaged in selling dry goods, there is no similarity between their business, and a comparison would be the height of foolishness, because the difference in the line of goods, the rent, freight, facilities for handling goods, competition, and a thousand and one other conditions and things make their business entirely dissimilar. And still many railroad companies are year in and year out comparing facts as uncomparable and dissimilar as the case supposed. To illustrate the matter more clearly, two roads are each month exchanging performance sheets. One road runs along a lake shore for many miles, is perfectly level, is exposed to powerful side winds from the lake, they build no new engines and haul many oil tank cars with a truck in which the oil boxes are bolted to a wooden beam, and which cars haul as heavy as two ordinary box cars with diamond truck. This road also hauls two foreign cars to one of its own, and uses nothing but the ordinary eight-wheel engine

The other road runs through an inland portion of the country, and is sheltered by the timber on each side of its line of road, has heavy grades, builds its own engines in the old fashioned style of "cut and try," hauls its own cars to a larger extent than foreign cars, and uses Mogul engines largely. The former road's performance sheet shows a cost of sixteen cents per mile while the latter occasionally runs as high as 20 cents.

It is evident that the details entering into the make-up of these two performance sheets are so entirely different that a comparison is impossible, and to say which road's locomotive is run the cheapest is equally impossible. The reasons for this are plain from the above, but to make it still clearer the following facts may assist. On some roads the number of cars making a train is decided by the engineer, who frequently, if desired to haul thirty cars, will refuse to take more than twenty-five, because his engine steams badly, or the coal is poor, or he has ten flues plugged, or the rail is bad, or any of the too-numerous reasons the average engineer has at his tongue's end. In such cases, the engineer desiring to make a good record on fuel and repairs, and knowing that the extra cars will count against these items, refuses to injure his record, which, if bad, gets for him a reprimand from the master-mechanic. On other roads, where the transportation and mechanical departments are on the best of terms, the number of cars is designated by the former department and the trains are as large as the engines can haul. The engineer may complain and bring his excuses forward, but they avail him nothing, as he is informed that *there* is his train and if he can't take it, he may take his engine to the round-house. He knows the significance of this, and manages to get over the road with the train. The former road shows a small expense per mile run by its engineers, because the engineer determines the most favorable conditions—that is a light train, which allows of his working the reverse lever back to twelve or fourteen inches and using the steam expansively, while the latter road loads its ingines so heavily that the reverse lever is seldom back of twenty inches, and the cost of fuel per mile is greatly augmented. The layman would naturally suppose the master-mechanic of the former road to be the better man, on examining the performance sheets of the two roads, whereas, unless he fully understands the most minute particulars of both roads, he would be doing the master-mechanic of the latter road great injustice. Another source of great uncertainty in looking for information for comparison between the locomotive departments of two roads, as shown by the performance sheets, is the great variation of mileage allowed for construction train engines,

switching engines, hill engines, etc. One road allows sixty miles per day for a construction train engine, another road 100 miles. One road will credit its freight engines with ten miles per hour for the time they are waiting at stations, and for all delays. Other roads allow nothing. Some roads give their switching engines six miles per hour, others eight, ten and twelve. Their different rates are frequently stated on the sheets, and if they were, when so stated, the actual allowances, a better comparison could be made, but in the writer's knowledge, several engine dispatchers credit their switching engines with *ten* miles per hour, when it is stated on the performance sheet that but *six* miles per hour are allowed. Every fictitious mile thus gained helps out the showing. To illustrate this:—the writer has seen sheets of roads where the mileage per ton of coal for the twenty odd switching engines ran from forty to fifty miles, while the sheets of another road in the same locality, using the same coal, etc., showed from ninety to 130 miles per ton of coal. This does not mean (although it is intended it should) that the latter road has better engines, or that they are in better condition, or handled more skillfully; but it does mean that the latter road allows more than twice the mileage per hour. It will be seen that the latter road, by a little skillful juggling, gains about 3,000 miles per month, which proportionally decreases the *printed* cost per mile run. Another very influential item in making up the showing of performance sheets, is the head to which the cost of building a new engine to take the place and number of a condemned engine is charged. If charged to "equipment," the performance sheet is benefited by from $8,000 to $12,000; if charged to "repairs," this amount swells the general average of "cost per mile run," and as how such items are taken care of is not stated on performance sheets, the entire worthlessness, as a source of comparison, of such sheets is apparent.

It has been proposed to reduce the performance of engines and trains to "mile-tons" of work done by means of a dynamometer attached to a train of known weight, and hauled over the entire length of the road. Thus would be taken into account all curves, grades, etc., in making up the average resistance per ton per mile, and this once established would determine by simple multiplication the gross work of any number of tons handled in a given time. With such a system in use, and a universality of treatment of all the other items, a fair comparison might be made. But the increase of clerical work involved in such a system will probably prevent its coming into use.

SINBAD.

TO PREVENT RUSTING OF IRON.—Thousands of dollars are lost each year by the rusting of plows, hoes, shovels, etc. Some of this might be prevented by the application of lard and resin, it is said, to all steel or iron implements. Take three times as much lard as resin, and melt them together. This can be applied with a brush or cloth to all surfaces in danger of rusting, and they can easily be kept bright. If tools are to be laid by for the winter, give them a coating of this, and you will be well repaid. It can be kept for a long time, and should always be on hand and ready for use.—*Building*.

THEY who dig the deepest, build the safest.

Our English Letter.

WRITTEN SPECIALLY FOR THE AMERICAN RAILROAD JOURNAL.

SINCE I wrote you last, the half-yearly meeting of the Eastern Extension, Australasia and China Telegraph has been held in London, under the presidency of Mr. John Pender, M. P. The following passage from the report shows the financial position of the concern:—"The gross receipts, including Government subsidies, have amounted during the half year to £213,729, against £207,119 for the corresponding period of 1882. The working and other expenses (including £22,759 for cost of repairs and laying of new cables and expenses of ships) absorb £62,779 against £50,356 for the corresponding half year of 1882, leaving a balance of £150,951. From this is deducted £2,000 for income tax, and £41,595 for interest on debentures and contributions to sinking funds, leaving £107,356 as net profit for the half year, against £113,393 for the corresponding period of 1882." Of the chairman of the meeting I need say but little, because he is well-known in both hemispheres as a man of business who handles capably very gigantic interests. Perhaps those of your readers who have known his as a prominent name during many years, and observe his doings with the greater interest since he was a visitor to the United States, are not aware of the fact that he is of an exceedingly humble extraction—one of numerous self-made men of whom we as well as you can boast. The writer has been informed that he began life as a common carpenter. All honor, I say, to the man of brains and energy who emerges from obscurity into world-wide fame.

Judging from a recent speech made by Mr. Chamberlain, our Radical cabinet minister, Mr. Plimsoll's humane impulses have still abundant cause for provocation. The wonderful development of the British marine is at the expense of many lives. In his great speech at the recent Trinity House banquet, Mr. Chamberlain said: "The loss of life at sea is continual, and is increasing out of proportion to the trade by which it is accompanied. Last year 1,303 British ships went to the bottom, representing a loss of 378,000 tons. The year before 1,310 ships were lost, representing a tonnage of 348,000 tons, and that is the largest loss of ships at sea that has ever been recorded in the registers of the State. In last year alone in British ships, 3,372 lives were lost, and that also is the largest death rate on our registers, excepting one year, 1874, when two colonial ships went down with 1,200 coolies, who perished on board." I may be running off the track a little to observe that Mr. Chamberlain, whether he knows it or not, is the coming statesman of the United Kingdom. He is the head and front of the democratic movement which is leavening the whole lump of British politics.

M. de Lesseps has been feasted and flattered to his heart's content while on a visit to this country. British interests need better facilities in the use of the Suez Canal, and probably in the addition of a second channel of communication between the Mediterranean and the Red Sea. Both objects are well served in the impressionable vanity of the clever Frenchman who made the canal, and your shrewd Britisher has found this out. Speaking of M. de Lesseps, who, your readers may not know, is of Scottish extraction, I am reminded that he aired his eloquence to some purpose while in England during his short stay in the early part of November. Even Ameri-

can oratory would be tasked to produce anything better said than the following: "Commerce and navigation require that isthmuses, which were barriers to them, shall become free straits, that vast barren depressions accessible to the sea shall form new shores and ports, and that lines of railway shall continue to extend their network all round the earth. Thus, I say, free straits, inland seas, commercial ports and railways are the real roads of peace and civilization."

Mr. J. K. Cross spoke hopefully at the close of the late session of Parliament, of the present and future development of the railway system of Hindostan. It seems that although thirty years have elapsed since the first railway was constructed in that vast country, only ten thousand miles were open for traffic in March, 1883, but steps have been taken under the energetic administration of the Earl of Ripon, to largely increase this number within a few years.

Middlesborough, as probably your readers know, is the centre of the Cleveland iron district. It is a large town which has grown up like a mushroom. Not much longer than a generation ago it had no being, and now is the center of a vast industry and considerable commerce. To promote this, the Northeastern Railway Company are about to begin the carrying out of a comprehensive scheme for the extension of the docks, at an estimated cost of over two hundred thousand pounds. The present docks are reached by means of an artificial channel branching off from the river. This channel is to be considerably deepened, and widened from eighty to 230 feet; the entrances of the docks are to be greatly improved, the docks themselves are to be enlarged very appreciably, ample provision will be made for the access of the largest class of vessels at all states of the tide, and upon the quays will be an extensive supply of hydraulic machinery for the rapid loading and unloading of cargoes. Middlesborough, I may add, up to quite recently had very inadequate public buildings, both as to size and appearance. Mr. Gladstone, who is a grave and reverend seignior but little given to jocularity, on a visit made to that murky town some twenty years ago, made a joke at the expense of said buildings, which still clings to the local recollection. Speaking of the tiny town hall, he said it reminded him of a growing boy whose legs had gone too far through his trousers. Middlesborough's importance, by the way—no joke intended—is augmented by the new railway, known as the Whitby, Redcar and Middlesborough.

An action has been tried in the City of London Court which has an amusing as well as a practical side to it. The plaintiff was a Mr. J. Tolley, Jr., of 66 Cannon street, London, who sued the Southeastern Railway Company to recover the sum of one guinea for damage done to a hat whilst traveling on the defendants' line. The plaintiff stated that on the twenty-fifth of August he was a passenger on the line, and on arriving at London-bridge station he rose to get out of the carriage. In doing so his hat, a new white one, came into contact with the lamp. The outside was very greasy, and consequently made a mark on the top of the hat which could not be removed. The hat being thus rendered useless, the proceedings were taken. The solicitor for the company said the plaintiff should have exercised more care, and could not recover for his own negligence. His Honor: Are you bound by statute to carry lamps? The Solicitor: Yes, I think we are. His Honor: Then you must make your carriages higher. I must find for the plaintiff, with costs.

Among several noticeable railway inventions patented quite lately, should be particularly mentioned the sleeping berths invented by R. Hutton, of Disley, and R. A. Gartside, of Manchester. These are suspended by means of india rubber or other springs or chains. Presumably a comfortable arrangement, which suggests that I leave your readers to their repose.

H. A. L.

THE Mann boudoir cars, the first of which came out of the Troy shops at the end of November, are to be particularly offered to traveling theatrical companies. Colonel Mann, the inventor or promoter, is said to be a Georgian who went to Europe and worked up a sleeping car system and offered it to Mr. Pullman, who preferred to take his own system thither. Sixty-three European railroads have adopted this system. The two cars now ready are completely of American manufacture; the embossed or leather work, which resembles bronze, is made in New York; the prevailing tint of the car lining, of amaranth wood from India, is a subtle dark red. The exterior of the car is a dark blue, and over the windows are designs in stained glass. A passage-way runs along the side of the car from end to end, and at one end is a space for ladies traveling alone, shut off by a door across the corridor. At the other end are a buffet, small smoking-room and *commodes*. Several staterooms of different sizes, some connected, make, by day, English compartments with a baggage netting, a table that turns into a ladder, electric bell, and berths, either two or four in number, across, not lengthwise of the car, each berth single and none of double width; these berths become two seats by day. Ventilation is secured by collecting the air in a funnel and passing it through ice, shavings and water to take out the soot and dust, and then letting it in at the corridor floor to go out through the state-room top. By the Mann system more privacy is secured at the expense of room, vivacity, and light. The parlor cars we already possess contain the corridor within the saloon, and the night cars, by the lengthwise arrangement of berths, also contain it. The Pullman and the Mann car each accommodate twenty-four passengers.

PROF. BURT G. WILDER, of Cornell University, says that a student should never sleep less than eight hours, nor study directly after meals. The Professor should advance this idea cautiously. He may find his students eating half a dozen meals a day.

A STEEL pen, like a race-horse, should have good usage, bearing equally on each nib and the penholder pointing to the shoulder. With an occasional rest, in conjunction with every instrument made of steel, an Esterbrook Pen will accomplish wonders.

IT always makes a man open his eyes on a Western train, when he tells a fellow-traveler what a splendid plate of raw oysters he had in the hotel car, to be informed that the oysters were removed from their shells about a year ago, and that they are taken from hermetically sealed cans, when ordered, and placed in shells carried on the train for that purpose.—*Puck*.

Tramway.

[The English nomenclature of "Tramway" is adopted in this department as being of greater convenience and more specific in its meaning than "street railway," though in alluding to individual organizations we shall preserve their corporate titles. It is our hope to nationalize the term Tramway, which is now generally used in every English-speaking territory with the exception of the United States.]

American Street Railway Association.

President.—William H. Hazzard, Brooklyn, N. Y.
First Vice-President.—James K. Lake, Chicago, Ill.
Second Vice-President.—George B. Kerper, Cincinnati, O.
Third Vice-President.—D. F. Longstreet, Providence, R. I.
Secretary and Treasurer.—William J. Richardson, Brooklyn, N. Y.
Office of the Association, cor. Atlantic and Third Avenues, Brooklyn, N.Y.

TO OUR READERS.

THE Tramway department of this magazine is now a year old, and a review of what has been accomplished therein during the past twelve months, is gratifying and encouraging. It was undertaken with the purpose to develop a new feature of journalism, and received in its beginning that substantial appreciation, expressed by leading men in the street railway interest, which has continued and increased to the present time. The stage of experiment has long been passed, and we shall begin the second year of what only twelve months ago was a novel expression of journalistic enterprise, with the confidence which results from the practical proof that we began it at the right time, in the proper spirit, and by the employment of the true means to success in the undertaking. To readers who have kept track of what we have periodically presented relative to street railways, from the time when the new departure was made, we need not say that information has been new, timely and full, and that every one of the minor interests involved in one of immense magnitude, has been impartially represented. This has been illustrated in a remarkable manner, by the prominence given to the subject of the cable as a motor. Moreover, the evidence of what we have ventured to claim, has been given, in the most satisfactory and convincing manner, in the form of opinions and various practical suggestions, stated by persons most competent to give them, either in the shape of communications written above the signatures of their authors, or, with the ready courtesy for which we submit our acknowledgments, in response to the questions of interviewers detailed from this office. These pleasing reminiscences are submitted as patent facts and without vanity, but, we are free to acknowledge, with the consciousness that we are deserving of such credit as is attached to diligence and the disposition to be strictly impartial in what we print; and with the cordial recognition of the very substantial aid given our venture by well-informed and practical street-railroad men of both the United States and Canada.

In making these observations, which seem to us opportune at the close of the first year of the Tramway department, we desire to add that our arrangements for 1884 justify the promise that it will be found better and stronger during that time, than it has been in the first twelve months of a period of encouraging development. In this assurance we respectfully invite the coöperation of all who can, in any way, promote our intention to expand, as far as it can be expanded, the street railroad department of this journal.

CONTRIBUTIONS treating the varied subjects coming under street railroad matters, are always welcome; such as descriptions and suggestions on road-beds, observations on the heating of cars, the choice and care of horses, motive power, the relation of companies and their employés, the constructing and ornamentation of cars, etc., etc. In short, the Tramway Department is open to the discussion of all matters coming within the scope of its comprehensive signification.

OUR valued contributor, Mr. Aug. W. Wright writes us that certain typographical errors appeared in his communication printed in the October issue. In correction of these he observes: "I said: 'A motor must therefore be proportioned to take its maximum load at *all times* and under the most *unfavorable* (not *favorable*) circumstances.' Again: 'The usual allowance for this friction upon a straight and level (not *loose*) track of T rail,' etc., etc. Again. 'The above brief statement, Mr. Editor, is my reason for asserting the *superior* (not *inferior*) advantages of horse power up to this time,' etc., etc."

MAYOR EDSON, of this city, has appointed commissioners under the act passed on June 18, 1875, commonly known as the Rapid Transit Act, for the purpose of laying out a route or routes for railway companies to construct and operate traction street surface railways in this city.

The appointment was made on a petition presented by James Gamble, general manager of the National Cable Railway Company. It is reported that the commission will meet and organize as soon as possible, and receive propositions for the establishment of new routes to be operated under the cable system. The officers of the National Cable Railway Company are: William P. Shinn, president; Constant A. Andrews, vice-president; J. C. Lewis, secretary; Thomas W. Evans, treasurer; James Gamble, general manager; General Egbert L. Viele, consulting engineer; William Dorsheimer and Robert Sewell, general counsel. The company is the owner of all the Hallidie and other patents which are used in the street railway system in San Francisco and Chicago.

THE new cable road from San Francisco to Ocean Beach was opened December 1. It is over seven miles long, yet the the trip is made in half an hour and the fare is only ten cents. Messrs. Stanford and Crocker are the chief owners, and are said to have made the road the best equipped cable line in the country.

The Cable Tramway in San Francisco.

THE following communication will be read with the greatest interest. We believe it to be the most complete and most useful article on its subject, which has yet appeared.

SAN FRANCISCO, November 9, 1883.

Editor American Railroad Journal:

One of the first questions asked by the general public, when seeing for the first time the narrow slot between the track of the cable tramway, is, How do you keep the dirt out of the tube? it must soon fill up unless you keep many men at work to clean it out. The answer is simple—the dirt doesn't get in to any extent, and in the roads in San Francisco the tubes only require cleaning out three or four times a year, and even then the amount is so small that it does not exceed three cubic yards to a mile of tube. This, which at first was a question of much importance, has ceased to be of any moment; and, as in this city during some three or four months of the summer, and at short intervals for two or three months more during the spring and autumn, we have strong winds without any rain, large quantities of dust and sand are moved in the streets, and I suppose we are more liable to experience trouble from dirt in the tube than any other city. With the experience we have had here we do not consider the question of dirt in the tube at all, or at least of any importance, as affecting the running of the carrier sheaves under the endless cable. In that respect our experience may be of advantage to other cities desiring to build cable tramways.

So far as water is concerned, in low or long level sections of the road connections are made to the sewers, and, as the slot of the tube at the surface is slightly higher than the rails, the water during a heavy storm runs off to the side gutters of the street instead of dropping much into the slot.

As the first two tramways operated by cable in San Francisco were much in the nature of experiments, the tubes (which are a large factor in the cost of construction of a cable tramway) were made largely of wood, that the expense might be confined within moderate limits, but, with the termination of all experiments, and the success of the cable, both mechanically and financially, more care and expense were devoted to the construction of the tube and permanent way, and the latest built road, that of the Market Street Cable Railway Company, has been constructed with a lavish expenditure of money, with the desire to have the best and most permanent method of construction that could be devised. The metallic portion of the structure consists of railway bars bent to such a shape that the center forms a portion of a circle of the shape of the bottom of the tube, while the ends are carried up and outward to the under side of the rails, to which they are connected by a wrought iron chair riveted to the rail, and having a slot into which the flange of the rail is set, and projecting ears from the chair are turned over cold on to the flange, thus securing the rail permanently. Suitable brackets project upward from near the bottom of the rail, and also inward horizontally from the chair, which support angle irons, that serve to form the seat from the surface of the street to the interior of the tube. The frames or skeletons for the latter are placed along the street every three feet, and the rails and angle iron fastened to them; then moulds to form the inside of the tube are put in place, and outside and around is placed concrete, forming a monolithic structure the whole length of the road, and as enduring as the metal of the rails and slot irons. This has been considered, for this particular purpose and the locality where the road is built, to be the best adapted, and is, undoubtedly, warranted by the decreased cost of operating expenses and the increased capacity for traffic. The cost of construction of this road—or rather conversion, as it has been heretofore operated by horses—is, probably, much greater than any road of the kind, and as the owners of the road control the railway system of California, and have had much experience, it may be presumed that they would not add double the original cost of construction to a tramway were they not reasonably satisfied of a fair return for the investment. I believe that the increase of travel requires an increase of about 25 per cent. in the number of cars, although each car has an increased capacity of about 40 per cent over the old cars operated by horses, in seating capacity and more rapid transit.

In San Francisco the tramways which pass the hills have to encounter heavy grades, and the first question, almost, was a grip that would hold the rope without slipping, the wear of the rope being, although an item of considerable expense, deemed not of the vital importance of the sustaining power of the grip. This may be appreciated when it is known that the grade over which some of the cable tramways run has a grade of one in $5\frac{3}{16}$, or nearly 1,000 feet to the mile. After the practicability of a grip for this work was demonstrated, came the desirability of saving, as far as possible, the rope from wear by the friction through the grip, and this has been reduced primarily by guiding rollers arranged so that when a car is stopped for the taking up or putting down of passengers, the dies or jaws (which hold the rope when the car is being propelled) are withdrawn from the rope so as not to touch it, yet, at the same time, the guiding rollers allow the rope to pass along without much friction or wear; secondly, by the care in connecting the grip to the rope when starting a car, which is a matter of practice with the grip man or the one who has charge of the grip. It was first thought necessary to have the grip constructed so that the shock of the rope in starting a car would be partially absorbed by springs, with a long range of extension or compression; experience demonstrated that the rope itself, if kept to the proper tension, and supported at proper intervals, and the grip closed upon it with the instinctive care which short practice by an intelligent man ordinarily yields, provides all the spring that is necessary, and so now in the latest mode of construction the spring in connection with the grip is dispensed with. Some of the grips used on the roads in this city do not have any guide rollers for supporting the rope when moving loosely through the grip; others, when the grip is made to open on the side, so that the grip has to move laterally to get into and out of the grip, have two guiding rollers under the rope, and when the rope is released from the die or jaw by moving the jaw vertically downwards, the rope, by its weight, lies in the two guiding rolls. Another form of grip, and the earliest, has the dies to open by moving laterally, and this has four guiding rolls, inclined toward each other and pressed against the rope by a spring having a limited

amount of compression, so as to keep the rolls in contact with the rope when the jaws are withdrawn from gripping the rope. In this arrangement of grip the rope can be picked up at any part of the road by opening the jaws wide by an auxiliary screw, and when lowering the whole grip and frame down over the rope the closing the jaws sufficiently so that the guiding rollers will carry the rope; then raising the grip and frame again until its proper height is reached, so that it will not strike the carrier sheaves in passing over them, and then it is all in condition for starting the car or train. When the grip is so constructed that the rope enters the side (or "side-grip," as it is called to distinguish it from the grip where the rope enters vertically into it from the bottom, and which is called a "bottom grip"), in order to put the rope into the grip, the track is usually covered slightly side wise, and the rope is also raised up for a short distance by carrier sheaves at that particular point, or the road-bed or track is sunk down so that the opening into the grip and the rope will be at the same height, and the car and grip passing this point the track is curved back again to its normal direction.

The friction of the grip on the rope in taking hold naturally causes wear, and in time the wires in the lay of the rope on the circumference show the abrasion, and in case of some of the ropes have shown much apparent crystallization. So far as the working strength of a rope is concerned none are really worn out, but through the continued movement and changes of direction around sheaves, and the chafing in passing the grips, the lay of the rope becomes slack, and where the rope has been spliced the ends gradually work out, and, finally, project sufficiently to be caught by the grip, and this strand is pushed back, forming a coil around the rest of the rope, and then this has to be taken out and a new strand put in, or, perhaps if a rope has been worn some time, the whole splice has to be cut out and a new piece put in. The ropes are discarded from service long before their breaking strength is reduced to anywhere near the load to which they may be subject in ordinary wear or work. The life of a rope is as long as the surface of the rope can be kept smooth, and as it passes along it has the appearance and touch of a round bar of iron. The life of a rope varies, or the lives of different ropes on the same road are different. Nearly if not all of the known flexible steel, and some iron ropes, have been tried on the roads in this city, and none has equaled in durability the crucible steel iron rope manufactured here.

On one of the roads here, one rope gave a running life of over twenty-two months, while the next rope had the short life of not much more than one-quarter of that, but the short lived rope was of an entirely different kind from the other, and was tried for the purpose of demonstrating the values of different kinds of rope. The power required to propel the rope, with the necessary driving machinery, including all the sheaves along the road for supporting the rope, and large sheaves for changing the direction of the rope, will not exceed for properly arranged and constructed driving-gear, one-horse power indicated for each five thousand pounds of rope moving at a velocity of one mile per hour, and this proportion is perhaps diminished as the speed is increased up to ten miles per hour. The power for hauling cars is about fifteen pounds per ton at a speed of six miles per hour. The cost of fuel for the passengers carried varies considerably, as the amount of coal consumption, for the fuel capacity of a tramway is not much more than when only one-half its capacity is taxed. On one road here, 13,000 passengers have been carried with 3,700 pounds of Sydney coal, and on another road 16,000 passengers have been carried with 4,200 pounds of Cardiff coal, while with one-half this number of passengers carried on either road, the decreased consumption of coal was scarcely noticeable. We find much difference in comfort and convenience between roads that have engines that run steadily and those that do not; or in other words, regularity of speed in an engine driving cable tramways is an important element in their operation. I do not know of any work performed where the variations of work are so great, with a demand for such regularity as in our roads in San Francisco, owing to the grades to be overcome. A train consisting of dummy and car, with passengers weighing, say ten tons, and taking a strain on the cable of 150 pounds to haul it on a level, requires a strain of 2,150 pounds to haul it up a grade of 1 in 10, and some of our grades are much steeper than this, or 1 in $5\frac{8}{10}$ to 1 in $6\frac{1}{10}$.

Unless the speed of the rope is maintained at a uniform rate when these changes of grade take place, the tension of the rope being increased, causes a variation of speed in the cars all along the line, and this to some causes sickness, especially among ladies. The effect is noticed in the complaints of the public, who avoid, when possible, those lines where the speed of the engine is not uniform under great variations of work suddenly imposed upon it. The work is, from such causes as above alluded to, increased as much as three times the average work of the engine, and demanding for economy, an engine that can furnish an extended range of cut-off in the valve gear. Of the various engines that I have indicated here on the cable tramways, none have approached the Porter-Allen engines for regularity of speed, although they had not the desired range of cut-off for best economy. For driving the rope, or rather for giving the necessary traction to the rope which passes over the driving drums, different devices are used on different roads, one using a clip pulley or drum having hinged clips arranged around its circumference, and which compresses the rope as the strain comes on it and releases the rope as it leaves the drum.

Another arrangement is similar to that used on the Mahancy inclined plane, in Pennsylvania, having two large sheaves arranged one before the other, and the rope passing partly around both and thence around an idler sheave placed on a traveling carriage so that any slack in the rope from stretching may be taken up, and thence to and along the street. Another arrangement is the two drums similar to those on Bishop's derrick, and such as is used for driving the rope over the Brooklyn bridge. Each is adapted for particular local conditions, and former experience of the constructing engineer will determine for a road to be constructed which is best adapted for the work required, and locality where the machinery may be placed. As the engine of the day has high piston speed, and the speed of traveling cables is comparatively slow, intermediate gearing becomes a matter of some importance. If the engine house is located in a densely populated district, or a neighborhood where much noise from running machinery is a nuisance, gearing should be made of such kind as will give the least offence.

Some of the roads here use double-gear, and others use single gear and slower piston speed, and one uses round cotton belting with grooved pulleys, while another uses a single wide leather belt from the engine-shaft pulley to the large pulley over the driving-drum shaft. Each one of these systems of driving-drums and gearing has its advocates. When single gearing is used between the engine and driving-drum, of course slower piston speed and larger cylinders ensue.

The study and construction of cable tramways is destined to become of great importance in the transit of people about cities, and the advantages of this system of propulsion of tramways will, in the near future, cause it to take the place generally of all others as being the most economical in operating, the most rapid, prompt, reliable, and comfortable to the passenger.

W. W. HANSCOM.

Painting Street Cars.

BY AN OLD PAINTER.

II.

THE ornamentation of a car, both exteriorly and interiorly, forms no little part of the painter's labor, and for that reason I think a second chapter on street car painting will not be amiss. There has been of late a seeming desire to ape the styles of the æsthetic house decorator, and to bedaub—if that's the word—the sides, ends and interiors of street cars with their Eastlake, Queen Anne, Japanese or some other such *stuff*. The style known as "Eastlake" was first brought out by Mr. Charles E. Eastlake, of England, and fully described by him in a published work entitled "Hints on Household Tastes." It is simply a "style," not a classified "order," with defined principles of treatment and rules of application and delineation. It is so unrestrained in its requirements that the wildest conceits of the uneducated pretender may be imposed, and the most absurd and distorted features defended as in "keeping with the style."

Delineated with taste and judgment in the sphere for which it was designed—*i. e.* house decoration—it may be made pleasing to the eye; but the excessive display indulged in by a class of reckless adventurers who abuse the integrity of this new idea by unsightly, extravagant and ill conceived creations of their own, is calculated to render it offensive and repulsive to those enjoying a fair degree of refinement in the æsthetics of ornamentation; this may in time cause its rejection even as a "style," except by those who prefer oddities, or, who being devoid of skill in execution, wish to palm off monstrosities as real works of art.

The school-boy will often produce upon his slate a more meritorious design than many we see on what ought to be good work, and it should be the aim of the true ornamenter to discountenance this innovation upon his trade, as it takes from him the value of all his years of practice, and brings his handiwork down to a scale at par with the dauber.

The eye of a tired traveler does not wish to rest upon distorted arabesques; he needs cheering by pleasant reminiscences, or by a peep at nature formed by art. The student who takes nature for his model—and he can get none better—cares not to waste time in studying out a Japanese puzzle, unless it be that he is infected with the la-de-da wild fever. The mechanic can catch no idea to enable him to gracefully form a pattern for some machine from the figures placed before his eyes, as he journeys homeward with mind all-absorbed in his daily avocation. He seeks for form in nature, and it may be, that while wandering in the park, a beautifully twisted leaf or stem, will convey the idea of a graceful stand for a lathe or other machine; and so he ignores the ornamentation placed before him, to find what the street car painter has missed, in the park among flowers and birds, leaves, stems and boughs as nature made them, not as a diminutive brain would choose to have them.

It may be a matter of dollars and cents with a railway company, who insist upon the "style" spoken of, for if they do their own painting, they can engage second-rate workmen to do such work at second-rate wages; and they can pass him off as an A 1 workman to those who don't know better.

These several styles, nearly all one thing, are well enough in their place upon the walls, dado, frieze or ceiling of a building, but, as said in my previous chapter when speaking of lettering, such work is entirely unfit for street car ornamentation, an assertion made by one who has been a painter for over thirty years in coach, wagon and car shops. I want to emphasize the idea that nature furnishes the best patterns for ornamenting. The scroll used by the Persians over 2,000 years ago was formed with flowers and leaves. The Acanthus plant was the proto-

FIG. 1.

type of the Greek scroll, the most beautiful one perhaps, for it still finds favor in the eyes of those who love nature. The artist who paints a landscape, succeeds in proportion to the exactness of his imitation of nature, and since the ornamenter's field is fundamentally the same as that of the former, the ornamenter ought to look for his copies to the same source, making such exceptions as the practical necessities of the case demand, and no more. If we become familiar with anything, we are enabled to grasp with greater ease the significance of similar things, and it is therefore important that we choose those subjects for ornament which are familiar; and what is more familiar than the forms of inanimate nature—leaves, flowers, etc.? The study of the designer should be to save the observer as much study as possible, and if he be able to make his work appear as if it grew in its place by a natural process,

he will have achieved all the honors of a true artist, and not till then.

If, as before hinted at, dollars and cents were the rocks on which true ornamentation split, I will endeavor to instruct those who are at present unacquainted with the plan, in a cheap, yet artistic style of ornamenting, namely: by DOUBLE STENCILING. The plain or single stencil plate is no doubt well known, and needs no comment other than that it ever has a cheap, "stencily" appearance, unless a vast amount of labor is expended in cutting out the bars with a pencil after the stencil has been "put on;" but with the double stencil there is no great amount of labor, and to all appearance it may be said to be hand work, and not, as I have heard it remarked, "The work was done by making a hole in a piece of paper and then rubbing it over with a brush."

TO MAKE A STENCIL, first procure some pasteboard, known as printer's press packing, a thin, hard and strong material, of a bright russet or leather color; a piece of

FIG. 2.

thick glass to cut upon, a sharp knife and a stone to sharpen it, and a pencil for drawing the design. These being at hand, it will be best to make the design on thin paper (ordinary white or manilla paper) so that the pasteboard need not be doubled; fold it once, and allowing the fold to form the center of the pattern, draw upon one side whatever taste may dictate as one-half the design, always keeping in mind that the parts which would drop out by cutting must be held in place by "bars" or connections with the main portion of the paper. When the drawing is completed, lay the paper (double as it is) upon the glass, and with a sharp knife cut out the parts marked, leaving holes in the paper so that when it is unfolded or laid out flat, the whole design will appear as a single stencil plate.

Now, having the ground-work thus prepared, lay the stencil upon a sheet of pasteboard, (as spoken of above) and, holding it firmly in place, pass over it with a stencil brush lightly, or just sufficient to mark an outline of the design, then mark with a pencil those parts which may be *cut out to cover the bars* as shown in Fig. 1, leaving the other parts untouched. Lay the pasteboard on the glass and cut out as before, thus forming, as we might say, one-half the pattern. To all double or triple stencil plates there must be a key, that is, some means by which one pattern may be laid over the other to secure correct "register;" and in the accompanying engravings the key is shown in the two dots at the intersection of the upper part of the figure. These dots are cut in each stencil, as shown. When the first half of the design is completed, lay it upon another pasteboard, having the faintly marked outline as before, as correctly as possible, then stencil brush it over so that the color is quite solid or prominent. Lay the second pasteboard on the glass and cut out all that is not solidly covered, making the "bars" to fall upon those places as shown in Fig. 2. Of course the key-holes will be cut in this stencil the same as before, then when No. 1 is painted, put the key-holes over the spots in No. 2, paint that, and a perfect design will be formed as shown in Fig. 3. Stencils made in this manner may be put on in two colors, but as a rule but one color is used, or gold leaf and bronze.

Such stencils should be neatly numbered and placed upon a hook on the wall, or laid carefully away in a book.

FIG. 3.

It is an excellent plan where much stenciling is done, to make a scrap-book of the patterns, that is, to paint them on to the leaves of a quire of manilla paper, and then if one is accidentally lost or destroyed, there will be a chance to cut a new one with but little trouble.

Stencil designs may be purchased from dealers in painters' materials, and it will, we think, be an easy matter to make them as we have shown when once the design is in hand. Pouncing is simply the application of whiting or other fine, dry powder through pin-holes made in paper, forming the outline of any object. The lettering on cars may thus be made uniform and the "laying out" be quickly done where many are to be finished alike.

Although there are a few who still cling to the absurdities in ornamentation, known as Japanese, Egyptian, Eastlake, and a dozen other such titles, we find that in the interior decoration of street cars, as done in New York for lines in other places, that something more than schoolboy sketching is desired. Here we see a window panel of white holly or other light wood, neatly centered with a landscape whose sky blends off to the wood, or in other words, "is lost in the distance." Here is another with a beautiful bunch of violets, another with ferns and green leafing "true to nature," but of all, though these are pleas-

ing to the eye of the weary traveler, and serve to divert his thoughts from care and toil, there is one style of ornamentation, which, to our eyes, oversteps anything we have yet seen. It was introduced by Mr. F. B. Gardner, the well-known writer on painting, and is described by him as follows:

The idea originated from spatter work as done by many of the fair sex, but this is more artistic, they simply leaving a bare spot, after the leaf or other object has been spattered over.

Mr. G. says: Procure a number of fern, oak, maple, and other nicely shaped leaves of many sizes; a bottle of Higgins' drawing ink (India ink); a tooth brush and a paper of small pins.

Now, having a white holly panel nicely smoothed off, lay on the leaves to form a pleasing bouquet, or whatever fancy dictates, and fasten them securely by pinning them to the wood. Next, pour some of the ink into a saucer; with the forefinger of the right hand moisten the ends of the bristles in the brush, then holding the brush directly over the panel and leaves in an upright position, gently press over the bristles with a little stick to bend them, so that in flying back they will send a fine spray of ink upon the panel. Repeat this operation, if need be, twenty times or more until the central part is quite dark and the outer edges blend off to nothing. Now lift one of the leaves and lightly spatter that part next to its mate, again another, and so on until all the leaves are removed, giving at the same time a light shade of spattering to the one side of each leaf, as in painting. When all is done, add a few veins with a fine pencil filled with the ink. It requires some practice to do the work nicely, but it gives a beautiful effect. Other forms, such as a cross or monument, may be added to the cluster of leaves, and these make a pleasing contrast. When all is done as described, let dry, then lightly go over the panel with a camel's hair brush filled with French shellac varnish, and finish as usual. For car panels, this class of ornamentation is not only new but beautiful.

Choosing either of these methods of ornamenting—the latter for interiors only—there is no reason why something better than school-boy designs should not be found upon street cars, and when railway corporations or supers have opened their eyes to the fact that the requirements for a car are different from those for a dwelling, church or theatre, and that a majority of their patrons are not æsthetic, in the Oscar Wilde sense of the term, the millennium will have been reached.

A COMPANY has been organized to construct and operate a cable line railway between Hailey, Idaho, the northern terminus of the Wood river branch of the Oregon Short Line, and Ketchum, 10½ miles distant. The track is to be three feet gauge, and the pulleys carrying the cable will all be above the track. The machinery is to be operated by water; the plant to be located on Wood river, about half way between Hailey and Ketchum. At that point a measurement of the water a few days ago showed 28 inches depth by 35 feet in width, with a speed of 65 feet per minute. The speed of the wire will be such as to take a car between the two termini in one hour.—*Railway Age.*

A MAN'S wisdom is his best friend.—*Sir W. Temple.*

List of Recent Patents for Inventions Relating to Tramways.

287,826. TRACE-HOLDING ATTACHMENT FOR HAME-CLIPS: Geo. W. Hall, Nora Springs, Iowa. Filed June 22, 1883.

287,833. HORSE-SHOE: George B Howie, Chicago, Ill. Filed June 14, 1883.

287,885. SCREEN FOR PROTECTING THE EYES OF HORSES: Joshua Sumner, Colorado Springs, Colo. Filed Aug. 21, 1883.

288,016. CAR-STARTER: Henry Clark, Milwaukee, Wis., assignor of two-thirds to Frank W. Erbacher and Christian Helms, Jr., both of same place. Filed Sept. 10, 1883.

288,141. HORSE-COLLAR PAD: Johannes Wallmer, Middlebury, Ind. Filed Aug. 22, 1883.

288,143. AUTOMATIC FEED-GEAR FOR ANIMALS: Elijah J. B. Whitaker, New York, N. Y. Filed Aug. 29, 1883.

288,180. GRIP FOR CABLE RAILWAYS: Almerin H. Lighthall, San Francisco, Cal. Filed Feb. 3, 1883. Renewed Oct. 9, 1883.

BEARING DATE NOVEMBER 13, 1883.

288,211. MOISTURE AND PRESSURE PAD FOR HORSES' FEET: Leander A. Couilliard, Boston, Mass. Filed May 28, 1883.

288,220. QUARTER-BOOT FOR HORSES: Joseph Fennell, Cynthiana, Ky. Filed July 11, 1881.

288,562. HORSE-COLLAR THROAT: Edward D. Fisher, Wooster, Ohio, assignor of one-half to George B. Miller, same place, Filed Aug. 27, 1883.

288,578. ADVERTISING DEVICE FOR CARS: Ernest Kitz, Indianapolis, Ind., assignor of one-half to Jacob W. Loeper, same place. Filed Feb. 14, 1883.

288,595. HALTER: Henry Rorebeck, Parma, assignor to Charles E. Coates, Spencerport, N. Y. Filed May 18, 1883.

BEARING DATE NOVEMBER 20, 1883.

288,614. HARNESS ATTACHMENT: Frank M. Boring, Jamestown, Ohio. Filed Sept. 20, 1883.

288,615. TRAVELING SIGN FOR STREET-CARS: Thomas H. Bowles, Atlanta, Ga. Filed Dec. 6, 1882.

288,636. TOE-WEIGHT: Charles B. Hitchcock, Indianapolis, Ind. Filed April 21, 1883.

288,646. ROPE-RAILWAY: Joel B. Low, San Francisco, Cal. Filed Dec. 17, 1881.

288,690. CABLE-GRIP: Benjamin F. Carman, San Francisco, Cal. Filed Sept. 11, 1883.

288,696. HARNESS CHECK-HOOK: Alfred C. Dietz, San Francisco, Cal. Filed July 3, 1883.

288,815. METHOD OF OPERATING CARS ON CABLE RAILROADS: John Jochum, Brooklyn, N. Y. Filed Oct. 8, 1883.

288,825. PAVING-TOOL: Philip S. Maloney, Philadelphia, Pa. Filed March 20, 1883.

288,836. HORSE-BOOT: Joel Miller, Philadelphia, Pa. Filed Sept. 3, 1883.

288,839. HAY-CARRIER: Richd. Miller, Appleton, Wis., assignor of one-half to John G. Kanouse, same place. Filed April 5, 1883.

288,880. OVERSHOE FOR HORSES: James W. Smith, Jersey City, N. J. Filed May 23, 1883.

288,947. CABLE SWITCH OR SHIFTER FOR UNDERGROUND ENDLESS-CABLE RAILROADS: Almerin H. Lighthall, San Francisco, Cal. Filed Oct. 13, 1883.

288,948. TAKE-UP MECHANISM FOR ENDLESS-CABLE RAILROADS: Almerin H. Lighthall, San Francisco, Cal. Filed Oct. 13, 1883.

BEARING DATE NOVEMBER 27, 1883.

289,129. FEED-BAG ATTACHMENT: John H. Palmer, New York, N. Y. Filed July 28, 1883.

289,139. CABLE-RAILWAY CAR: Charles W. Rasmusen, Chicago, Ill. Filed Feb. 13, 1883.

289,177. DETACHABLE HORSESHOE: Joseph Thomas and Byron Betzer, Kingston, Ohio. Filed April 25, 1883.

289,214. FEEDING DEVICE FOR HORSES: Theodore L. Brooks, Port Byron, N. Y. Filed Oct. 10, 1883.

289,341. FARE-COLLECTOR FOR PASSENGER-CARS: Benjamin G. Fitzhugh, Frederick, Md. Filed May 14, 1883.

289,355. RAIL FOR STREET-CAR TRACKS: Arthur J. Moxham, Louisville, Ky., assignor to the Johnson Steel Street Rail Company, same place. Filed July 25, 1883.

THE truly valiant dare everything, but doing anybody an injury.—*Sir P. Sidney.*

A Retrospective View.

"THERE be three things which make a nation great and prosperous—a fertile soil, busy work-shops, and easy conveyance of men and things from one place to another." Thus wrote Bacon in 1617, while as yet railroads were unknown; even long before the day when the contract was made for "a rapid line of coaches" between Edinburgh and Glasgow, a distance of 44 miles. The journey was to be made in three days, the round trip taking six days. If he had lived in our day, when railroads have made it possible to traverse the distance in less than a half-hour, would he not have said:—the prosperous nation is that nation whose railroad system is the most perfect.

The origin of the railroad is, by some writers believed to be unknown. There is in the British museum an Egyptian hieroglyphic which represents slaves drawing stones over a road like a primitive tramway. One writer would have us believe that a similar device was known in China many years ago. Whilst it is admitted that printing, gunpowder and many other things, were familiar to the Chinese before they were known to western civilization, yet it is highly improbable that anything approaching a tramway, nearer than a palanquin, was known.

The earliest authentic mention of a railway occurs in the life of the Lord-keeper, Roger North, early in the 17th century. About 1670 a double parallel line of wooden beams was laid at Newcastle-on-Tyne, and large carts with four rollers, drawn by horses, were used to transport coal from the mine to the river. A flange placed at the side of the beam kept the carts from rolling off the rail. So successful was the experiment that other coal districts in England and Scotland followed the example. It was a great labor-saving scheme, for a horse that could with difficulty draw only 17 cwt. without the aid of this smooth road, could now, with ease, draw 42 cwt. This was the earliest tramway, the precursor of the steam railway.

The first improvement made on this tramway was the laying of iron plates on the wooden beams; this contrivance reduced the friction and made less wear and tear.

In the year 1768, and not, as some writers claim in 1740, rails made wholly of iron were used, and almost entirely superseded the earlier style; and in 1789, when William Yessop built the first public railway in England, at Loughborough, he introduced the edge rail of cast iron, and changed the flange from the rail to the wheel. The rails continued to be made of cast iron, in lengths of about four or five feet, until 1803, when an experiment was made with malleable iron, with poor success, but upon a second trial in 1808, at Cumberland, they proved satisfactory.

During this time while so much was being done for the roadway, it must not be supposed that no changes were being made in the rolling-stock; small trains of two or three cars were now sometimes run, and vast improvements had been made in carriages. Up to this time the tramway had used horses for motors, and in some instances stationary engines, but men's minds had been constantly exercised to invent some method of drawing cars by means other than cable or animal power.

Richard Trevithick and Andrew Vivian, two Cornwall engineers, took out the first patent ever issued for a locomotive in the year 1802. In the previous year, however, Oliver Evans, of Philadelphia, moved a steam dredging machine a distance of one and one-half miles on its own wheels, with power furnished by itself. Evans had been ridiculed by scientific men, and when he advocated the steam carriage, they called it "Evans' steam mania," yet, notwithstanding the opposition, he had successfully built at the cost of $3,700, a steam engine with a six inch cylinder and eighteen inch stroke. As far back as 1759 Dr. Robinson, of the Glasgow University, suggested to Watt the practicability of applying steam to wheel carriages, and in 1782 Murdock, the tutor of Trevithick, made a model of a steam carriage; and considering this circumstance, it may be possible that Trevithick got his idea from Murdock. Watt, in his patent of 1784, describes a steam machine for drawing cars. All these steam carriages and appliances, however, amounted to almost nothing, so far as the public was concerned. It was not until 1804 that any really practicable locomotive was used. Trevithick in this year built a second locomotive which he used on the Merthyr-Tydvil Railway in South Wales. This engine drew a load of ten tons of iron ore five miles per hour.

From this date, 1804, until 1811, very little, if anything, was done to advance railroads; time and ingenuity were employed to invent some means to keep cars from slipping when going up an inclined plane.

Many and many were the appliances employed to get the locomotive to "bite." Elaborate systems of cog wheels, cars with hind legs, like grappling irons, all made for an entirely imaginary difficulty, for in 1811, on the Wylam railway, it was demonstrated that weight and friction were all that was necessary to draw loads up gentle inclined planes.

The first really successful engine was invented by George Stephenson in 1814. It ran six miles an hour, drawing thirty tons. Until 1829 there was little progress made, then Robert Stephenson built the "Rocket," which attained a maximum speed of twenty-nine and one-half miles an hour, with an average of 15 miles. In the United States the subject of railroads was carefully considered when the Erie Canal subject was broached. Stevens advocated a railroad instead of a canal, but his idea was considered visionary. The first road built in America was in 1826, at Quincy, Mass., from the granite quarries to the Neponset River, a single track about three miles long, and an inclined plane of about 275 feet. This road was used for the transportation of granite only; the rails being like the earlier iron-plated tramway roads. During this year, 1826, charters were granted to the Columbia, Lancaster and Philadelphia Railway Co., and the Danville and Pottsville Railway Co., the former on April 7, and the latter on April 8. In January 1827, the Mauch Chunk road was begun, and in three months its nine miles was finished. The Mohawk and Hudson River Railroad also received its charter this year to run between Albany and Schnectady. February, 1828, saw the Baltimore and Ohio road chartered to carry passengers between Baltimore and Elkridge, and in 1830 it was opened for travel—the first passenger road in America. It was only fifteen miles long, and the power used was horses. In the Summer of 1831 the Mohawk and Hudson opened for travel, they also using horse power, which they soon changed to steam power, using the first Stephenson locomotive imported into this country, the

"Robert Fulton." It must not be supposed that the "Robert Fulton" was the first locomotive in America, for W. Howard, of Baltimore, in 1828, took out the first patent for a locomotive engine, and this same year Horatio Allen, engineer of the Carbondale and Honesdale R. R., took the first locomotive trip upon a road in America. The experimental trip was made across the Lackawaxen on a trestle-work thirty feet high, with a curve of 400 feet radius. So dangerous was the undertaking considered that upon his return unharmed, he was welcomed as one snatched from the jaws of death.

What a mighty change is this. In 1826 there was in the United States three miles of railroad; in 1880, 86,497. In 1763 the stage coach between Edinburgh and London took two weeks to accomplish its journey; in 1835 the distance was 48 hours; in 1849 the time was reduced to 12 hours.

A grade of 30 or 40 feet to the mile was considered very heavy, and 70 or 80 feet was reckoned impossible. A grade as steep as this was overcome by the use of a stationary engine. To-day, engines are in use that can ascend grades of 500 feet and more. The Mt. Savage, George's Creek road in Maryland, has an ascent of 140 feet, and at Sheffield, England, a road has a grade of 196 feet.

In the light of our experience, how foolish the protest of Wood sounds, who wrote in 1825, "Nothing can do more harm to the adoption of railroads than the promulgation of such nonsense as that we shall see locomotive engines traveling at the rate of 12, 16, 18 and 20 miles per hour."

Railroading, advanced as it is, is far from perfect. We can learn many things from across the ocean Many things to adopt and many things to eschew. Let us learn to have cars like the twin palace cars on the North Western Railway, and do as they do, charge nothing extra for their use. Let us never develope such an elastic conscience as the French road which charges 45 francs ($9.00) for sleeping accommodation, their coupé de lit for *one night*. Let us learn something of speed from England's three fast mail trains, the "Wild Irishman," from London to Holyhead, where the mail is transferred to fast steamers, which make without difficulty twenty miles an hour, and at Kingstown is again put aboard the train and goes to Dublin; the "Mad Scotchman," from London to Edinburgh, which makes forty-seven miles per hour including the stoppages; and the "Flying Dutchman," a very significant name when we consider that the rate of speed is fifty-nine miles one furlong per hour. Surely the old Dutch captain never at his best doubled the Horn at this rate.

There is one thing the English can certainly learn from us, and that is how to check baggage. If there is one mighty abomination of English railway travel it is the system (if system it can be called), of handling luggage. Formerly the baggage was carried on top of carriages, so as to give the rain and soot unobstructed play upon it: but the tears and groans of tourists, over ruined goods, caused in time a reform, and now the baggage is placed in a compartment in the car. Upon arrival at the depot your baggage is given in charge of an official, who pastes upon it a ticket with your destination. Upon arrival at destination your goods are put on the platform, and going up you indicate which is yours, and it is delivered without a question. There is absolutely no protection; any stranger can get your luggage as readily as you can yourself.

Before closing, I want to mention a matter which seems to always attract the attention of tourists. Everywhere on the continent the freight cars are marked by the military powers, with the numbers which the car will hold either in horses or men, thus, thirty-six men, six horses, etc. In case of emergency the general of an army can tell at once his facilities for transportation.

E. L. B.

Lubricating and Lubricants.

BY E. F. DIETERICHS, CLEVELAND, O.

ALL the jointed parts—the valves, the slides, steps, journals and gearings of any kind of machinery—driven by steam, water or other power, require lubricating while in motion, to relieve the friction, lest overheating take place, injuring the machinery and causing loss of power used to produce the motion. To lubricate economically and efficiently is the aim of every thinking mechanic, and it requires not only understanding of machinery, but knowledge also of the theories of lubricating, and the nature and quality of the means adapted for that purpose.

I.

WHAT IS LUBRICATING.

Many engineers, machinists, manufacturers and oil men are holding to the theory that lubricating is simply interposing a substance of some kind or another, as a sort of cushion between the metallic surfaces of machinery in motion, and some even are advocating the use of softer metallic compounds and the finer grades of inert matter, such as plumbago, sulphur, lime, asbestos, soapstone, etc., for that purpose. Now, if this theory is correct, there should be no need for the use of fatty matter for lubricating, or certainly a very limited amount of lubricant should be sufficient for an indefinite length of time to prevent the retarding of motion, the heating and abrading, and subsequent injury to the machinery. We find, however, that this is not sufficient, and that we have to furnish a regular supply of lubricant in exact proportion to the frictional heat evolved by the velocity and the amount of work we expect to be done by our machinery. Friction is created wherever the surface of one part of machinery in motion is bearing on the surface of another, and friction creates heat. The heat is evolved in ratio with the velocity, and by continued motion, however slow, it finally accumulates to such an extent that the machinery has to be stopped to allow the metal to cool, or in other words, the heat absorbed to be given off into space.

Metal is able to absorb a large amount of frictional heat, but it is unable to free itself of it as fast as it is created under continued and rapid motion, and finally accumulates it to such an extent as to become overheated and softened, and if the motion is still continued will actually weld itself together.

To avoid such heating, and enable us to run machinery continuously, we have to apply other than metallic lubricants, and are obliged to apply them continuously, and as long as the machinery is kept in motion.

When we apply oil as lubricant on a particular part of machinery in motion, we find that in the course of time a considerable amount of it has been consumed. Where

has it gone? what has become of it? Even if we allow one-half of it as having been wasted carelessly, or as belonging to the gummy deposits wiped off from time to time, we have still to ask: What has become of the balance? This balance has been vaporized by the frictional heat evolved by the motion and carried with it into space, and we have to replace it over and over again by renewed applications, thus showing that the cushion theory is erroneous. What, then, is lubricating? The facts before mentioned show us that lubricating is the withdrawal and disposal of frictional heat from substances in motion against each other, to prevent their abrasion, economize power, and facilitate motion. We do this by presenting to the moving surfaces those of another substance better qualified to absorb the frictional heat, and better able to vaporize and radiate with it into space.

The parts in motion absorb the frictional heat, and if not allowed to rest, continue to absorb and accumulate it until they would finally reach their vaporizing temperature. We therefore interpose substances which can vaporize at a temperature far below that of the substance of which the moving parts are constructed, and which are thereby enabled to absorb the heat and carry it away, before the parts can accumulate enough of it to cause their expansion, softening and abrading, and subsequent interfering with their motion.

When the frictional heat increases to the vaporizing temperature of the substance, the atoms radiate into space with the absorbed heat, and the individuality of the substance becomes changed. Solid substances vaporize at higher temperatures than fluids, and by interposing the latter between the surfaces of the less volatile substance, the frictional heat is drawn therefrom.

Of all substances at our service for such purpose, water is probably the lowest lubricant; it will keep moving parts cool if we can apply it properly,and fast and lavishly enough, but its vaporizing point is so low that, for want of body, its absorbing and storing property allows only a limited transfer of frictional heat into space. We have therefore to look for substances that possess sufficient body and proportionate vaporizing quality, and this we find in fatty matter—animal, vegetable and mineral.

When we interpose fatty matter between moving surfaces, their viscosity permits their adhering to the latter, and at their vaporizing point they radiate with the absorbed heat into space; they vaporize at much higher temperature than water, and at a so much lower one than metal that the latter is prevented from absorbing more than a proportionate temperature as long as we continue to apply the lubricant. The characteristics of fatty matter differ, and their value for lubricating depends on their heat-absorbing quality, and a thereto proportionate vaporizing point.

(*To be continued.*)

THERE is a strong tendency among us to dodge all the practical, vital questions which press close around and upon us, and give ourselves in an indolent spirit to dreaming about the distant and unimportant.—*Dio Lewis.*

THE keel of a large propeller for the Cornell Steamboat Company is being laid by the Harlan & Hollingsworth Company. Her dimensions will be: Length, 240 feet; beam, 34 feet; depth of hold, 15 feet.

LITERARY NOTES.

JOHN L. STODDARD, whose eminent position in literature, we need not say, is assured, is the author of "Red-Letter Days Abroad," a captivating and elegant work. In its first portion the reader is taken through Spain, scarcely, if ever, more interesting in its chequered history than at the present time. Well written descriptions of Toledo, Cordova, Seville, the Alhambra, Granada and Gibraltar are accompanied with wood engravings of original design, and remarkable excellence. Mr. Stoddard next portrays the performance of the Passion Play at Ober Ammergau in 1880, which drew together about two hundred thousand men and women, through motives of mixed curiosity and piety—the former largely prevailing. His account of the play, his portraits of the leading characters who participated in it, his pictures of scenes from the play, and his descriptions of the peculiar surroundings, all are replete with great interest. The volume concludes with a description of the two leading "cities of the Czar"—St. Petersburg and Moscow. The same distinguishing characteristics mark these as the preceding papers. The narrative is smooth, and at the same time vigorous. "Red-Letter Days Abroad" is an appropriate gift book for the approaching season, its merits are so varied and striking, and its beauty so apparent. Boston: James R. Osgood & Company.

FISH AND FISHING.—The publishers of *The American Angler*, now in its fourth volume, announce that the illustrated series of essays on The Game Fishes of America, which have been issued each week by them during the year 1883, will be continued into 1884. These essays on angling are exhaustive, embracing over seventy-five engravings drawn from nature, of the representative fish of American waters, with copious letter press, giving the habits and habitat; popular and scientific description, coloration, etc., of each fish; also, the tackle used and *when*, *where* and *how* to capture them. These articles are written by the best angling writers in America and form a complete text book for anglers, a want not filled by any other existing publication. The twenty pages of *The American Angler* are issued weekly, and in addition to these valuable essays, contain sterling illustrated contributions and editorial articles on fish, fishing and fish culture; notes and queries as to the habits and modes of capture of game fish; reports of fishing (in season) from all parts of the country, etc., etc. It is the fisherman's paper—the only one on the continent. The publication offices are at 252 Broadway, New York, and the subscription price is three dollars a year.

A MAN on the cars having several thousand dollars in greenbacks in his possession, and fearing to go to sleep sitting in his seat, on account of seeing some suspicious individuals in his neighborhood, slyly slipped his money into the Bible belonging to the train, and on the following morning woke up to find his capital gone, and to learn that the men who slept with their cash in their pockets hadn't lost a cent. This fable teaches us that while it is a good thing to be just sharp enough, it is very dangerous to be too smart, and that when the smart man gets left, he is the most colossally left man that ever was left.—*Puck.*

THE secret of success is not so much in catching on as in holding on after you catch on.

New Inventions.

IMPORTANT TO INVENTORS.

THIS department of the AMERICAN RAILROAD JOURNAL is devoted to descriptions of the many and interesting New Inventions applicable to railroads, and in order to make it as complete as possible, inventors whose improvements properly come under this description, are invited to send us a detailed account of the same. This should consist of facts only, presented in clear and concise language, written only on one side of the paper, and the sheets numbered consecutively. In all cases in which it is desirable and practicable, the written description should be accompanied by a cut or cuts illustrating the invention. This or these should be marked distinctly on the bottom, with the name and address of the sender. All cuts received are preserved at this office, or returned, if desired, to the person sending them to us for use. As we have an engraving department we are prepared to make cuts, and furnish estimates of our charges for the same to those persons who write us for such particulars. That we may estimate exactly and without delay, it is necessary that we have sent to us, a photograph of the Model and a copy of the Specifications.

The reader of course understands that the editors reserve their inalienable rights to decide what "copy" they shall use, what changes shall be made in it, if any, and when they shall use it; but they guarantee the impartial consideration of every description sent them.

Descriptive articles relating to Tramways will be placed in that department.

List of Patents for Inventions Relating to Railways.

BEARING DATE NOVEMBER 6, 1883.

287,796. NUT-LOCK: William V. R. Blighton, Tonawanda, N. Y. Filed April 9, 1883.

287,806. SCREW OR NUT FASTENING FOR RAILWAY-BAR JOINTS: Benjamin Franklin Crocker, Hyannis, Mass. Filed Sept. 19, 1883.

287,810. RAILWAY-SWITCH: Wilson P. Dodson, Philadelphia, Pa. Filed Jan. 25, 1883.

287,849. CAR-COUPLING: Christian Niekrenz, Farina, Ill. Filed July 2, 1883.

287,860. CAR-COUPLING: John V. Reams and Archibald C. Majors, Burlington, Kans. Filed Dec. 6, 1882.

287,888. CAR-WHEEL: Theodore Thurber, Auburn, N. Y. Filed March 24, 1883.

287,889. CAR-BRAKE: Dolphus Torrey, New York, N. Y. Filed Oct. 23, 1882.

287,920. SWITCH-BLOCK FOR RAILWAYS: John Fonda, Battle Creek, Mich. Filed Jan. 23, 1883.

287,934. CAR-COUPLING: Elijah M. Hobbs, Santa Rosa, Cal. Filed March 6, 1883.

287,936. CAR-TRUCK: Orrin S. Holt, Chippewa Falls, Wis. Filed April 10, 1883.

287,952. MECHANISM FOR LAYING RAILROAD-TRACKS: Albert Michelson, Chicago, Ill. Filed Nov. 1, 1882.

287,961. AUTOMATIC RAILROAD-SIGNAL: Christian M. Raffensparger, Hanover, Pa., assignor of one-half to G. Milton Bair, same place. Filed Feb. 12, 1883.

287,966. DRAW-BAR FOR CARS: Halbert Rust, Jeffersonville, Ind. Filed March 16, 1883.

287,973. RAILWAY FOOT-GUARD: Frank W. Spencer, Flint, Mich. Filed June 16, 1883.

287,999. RAILWAY-CAR SEAT: Stephen Shaw Black, Fredericton, New Brunswick, Canada. Filed Jan. 16, 1883.

288,058. TAIL-LIGHT BRACKET FOR RAILROAD-TRAINS: Jas. D. Hollister, Savannah, Ga. Filed July 9, 1883.

288,074. CAR-COUPLING: Adolf Lehmann, New York, N. Y. Filed Sept. 7, 1883.

288,083. CAR-COUPLING: Alexander B. Mahon, Pensacola, Fla. Filed April 10, 1883.

288,103. DUMPING-PLATFORM: William F. Nine and Alber R. Case, Sully, Iowa. Filed Aug. 14, 1883.

288,105. CAR-COUPLING: Aaron Park, Ottumwa, Iowa, assignor to himself and Theodore P. Baker, same place. Filed Aug. 21, 1883.

288,112. RAILWAY-STATION INDICATOR: Parker Price, Sandy Run, Pa. Filed Sept. 8, 1883.

288,162. STATION-INDICATOR: William C. Collyer, Lynn, Mass., assignor of one-fourth to Charles A. Chase, same place. Filed Feb. 26, 1883.

288,190. CAR-DOOR: John L. Wagner and James Seath, Terre Haute, assignors to themselves, Thompkins A. Lewes, Indianapolis, Robert S. Cox, Terre Haute, Ind., and Henry R. Duvall, New York, N. Y. Filed June 15, 1883.

288,195. SPARK-ARRESTER: Howard M. Smith, St. Louis, Mo. Filed April 7, 1883.

BEARING DATE NOVEMBER 13, 1883.

288,209. COUPLING ATTACHMENT FOR LOCOMOTIVE TENDERS: George H. Colby, Boston, Mass. Filed June 14, 1883.

288,242. SIGNAL FOR LOCOMOTIVE HEAD-LIGHTS: J. Miller Kelly, Rochester, N. Y. Filed April 23, 1883.

288,258. CAR-COUPLING: La Fayette W. Page and D. Page, Shreveport, La. Filed June 8, 1883.

288,260. REFRIGERATING STRUCTURE: William S. Post, Boston, Mass., assignor to the Post Refrigerator Car Company, Portland, Me. Filed April 7, 1883.

288,270. CAR-COUPLING: Jas. W. Snyder, Emporium, Pa. Filed Aug. 21, 1883.

288,298. AUTOMATIC CAR-BRAKE: August J. Berg, Chicago, Ill. Filed Oct. 28, 1882.

288,335. STOCK-CAR: Henry Clinton Hicks, Minneapolis, Minn. Filed Aug. 16, 1883.

288,348. RAILWAY SIGNAL APPARATUS: Fred Lane, Boston, Mass. Filed Sept. 8, 1883.

288,356. DEVICE FOR MAGNETIZING THE TIRES OF DRIVE-WHEELS OF LOCOMOTIVES: Eusebius J. Molera, San Francisco, Cal., assignor to John C. Cebrian, same place. Filed Feb. 6, 1883.

288,361. SLEEPING-CAR: William H. Paige, Springfield, Mass., assignor of one-half to Daniel D. Warren, same place. Filed Oct. 30, 1882. Renewed Sept. 24, 1883.

288,378. JOINT FOR RAILWAY-RAILS: William J. Stevens, New York, N. Y. Filed Aug. 26, 1882.

288,379. STATION-INDICATOR: Samuel Stewart, Newark, N. J. Filed July 28, 1883.

288,388. CONNECTION FOR RAILWAY-BRAKES: Geo. Westinghouse, Jr., Pittsburgh, Pa. Filed Sept. 14, 1883.

288,398. CAR-BRAKE: Henry Barratt, York, Pa., assignor of one-half to Jacob O. Miller, same place. Filed Sept. 1, 1883.

288,461. AUTOMATIC CAR-BRAKE: David J. Macpherson, Sioux Falls, Dak., assignor of one-half to J. B. Young, same place. Filed Aug. 6, 1883.

288,469. CAR-WHEEL: Phineas E. Merrihew, Fairhaven, Mass. Filed Jan. 25, 1883.

288,470. DRAW-BRIDGE ALARM: Ernest F. Meyer, Lake Charles, La., assignor to Herman H. Schindler, same place. Filed May 22, 1883.

288,480. ELECTRICAL TRAIN-STOPPING AND SIGNAL APPARATUS FOR LAND-SLIDES: William P. Phelps, Philadelphia, Pa., assignor to the Railroad Safety Lock and Signal Company, of New Jersey. Filed July 21, 1882.

288,488. SPARK-ARRESTER: John Choice Printup, Rome, Ga. Filed Aug. 3, 1883.

288,494. RAILWAY-CAR GATE: William W. Rosenfield, New York, N. Y., assignor to Joseph Aron, same place. Filed April 3, 1883.

288,502. CAR-COUPLING: John W. Sheaffer, Franklin, York County, Pa. Filed April 2, 1883.

288,504. CAR-COUPLING: Victor Shreve, Detroit, Mich., assignor of one-half to Bolivar Meeker, same place. Filed Aug. 30, 1883.

288,507. RAILWAY-VELOCIPEDE: Geo. N. Spencer, Three Rivers, Mich., assignor of one-half to Hiram Gaskins, same place. Filed April 20, 1883.

288,513. ELECTRIC RAILWAY AND LOCOMOTIVE: William M. Thomas, Cincinnati, Ohio, assignor of one-half to Samuel W. Skinner, same place. Filed Nov. 6, 1882.

288,518. STATION-INDICATOR: William H. Waddell, Charlottesville, Va. Filed April 13, 1883.

288,519. RAILWAY TIME-SIGNAL: William H. Waddell, Charlottesville, Va. Filed April 13, 1883.

288,527. CAR-COUPLING: Johnson S. Waugh, Prospect, Ohio, assignor of one-half to K. E. Randall and L. Gast, same place. Filed June 23, 1883.

288,565. FREIGHT-CAR DOOR: Henry N. Frentress, East Dubuque, Ill., assignor of two-thirds to Charles W. Ware, same place. Filed June 9, 1883.

288,568. AUTOMATIC STOP FOR DRAW-BAR BRAKES: Wm. B. Guernsey, Norwich, N. Y., assignor to Jane M. Guernsey, same place. Filed June 22, 1882.

288,569. AUTOMATIC CAR-BRAKE: Wm. B. Guernsey, Norwich, N. Y., assignor to Jane M. Guernsey, same place. Filed June 23, 1882.

288,577. SWITCH-OPERATOR: James H. Kennedy, Iona Station, and Thomas P. Hall, Toronto, Ontario, Canada. Filed Feb. 26, 1883. Patented in Canada April 12, 1883, No. 16,651.

288,580. RAILROAD-GATE: Saml. B. Langford, Homer, La. Filed June 26, 1883.

288,594. PASSENGER-TICKET: John M. Reynolds, Oswego, N. Y., assignor to James H. Mandeville, Trustee, Washington, D. C. Filed June 21, 1883.

288,599. GRATE-BAR FOR LOCOMOTIVES: Isaac W. Swallow, Kingston, Pa. Filed Aug. 22, 1883.

288,600. CAR-COUPLING: Augustus T. Teall, Jr., Rochester, N. Y., assignor of one-third to William Manning and Charles E. Manning, both of same place. Filed April 30, 1883.

BEARING DATE NOVEMBER 20, 1883.

288,644. STATION-INDICATOR: George M. Lane, Asbury Park, N. J. Filed Dec. 23, 1882.

288,652. RAILWAY-FROG: William J. Morden, Chicago, Ill. Filed April 10, 1882.

288,656. COMBINED CHAIR AND FISH-PLATE FOR RAILROAD-JOINTS: Hiram B. Nickerson, New Bedford, Mass. Filed March 29, 1883.

288,678. CAR-STARTER AND BRAKE: Washington G. Stitt, Jabez Lowbridge, and Adam Rosenkranz, Allegheny, Pa., assignor of one-half to Peter Walter, Jr., same place. Filed Aug. 10, 1883.

288,680. STOCK-CAR: Stephen P. Tallman, Dunellen, N. J. Filed Aug. 23, 1883.

288,683. STOCK-CAR: Marion H. Walker, Whitehall, Ill. Filed Aug. 1, 1883.

288,704. RAILWAY-RAIL JOINT: Thos. H. Gibbon, Albany, N. Y., assignor of one-half to Dudley Farlin, same place. Filed July 26, 1883.

288,705. CAR-AXLE BOX: Geo. F. Godley, Philadelphia, Pa. Filed Sept. 19, 1883.

288,708. HEATER: Robert Johnson and John F. Buerkel, Boston, Mass. Filed Jan. 31, 1883. Renewed Oct. 20, 1883.

288,717. MACHINE FOR GRINDING CAR-WHEELS: Augustin W. McIntyre, Chicago, Ill., assignor, by mesne assignments, to the American Car-Wheel Grinding Company, same place. Filed June 9, 1882. Renewed May 19, 1883.

288,718. GRINDING-MACHINE: Augustin W. McIntyre, Chicago, Ill., assignor, by mesne assignments, to the American Car-Wheel Grinding Company, same place. Filed Dec. 8, 1882. Renewed Sept. 24, 1883.

288,719. AUTOMATIC CAR-BRAKE: John D. Meenan, Ridgway, Pa. Filed June 16, 1883.

288,754. CAR-COUPLING: Myrick R. Allen, Lewisburg, Tenn. Filed Oct. 13, 1883.

288,760. DUMPING-CAR: Andrew Beckert and William E. Ludlow, Sandusky, Ohio. Filed April 2, 1883.

288,779. CAR-SPRING SUPPORT: William Don, New York, assignor to William White, White Plains, N. Y. Filed Sept. 1, 1883.

288,780. CAR-AXLE BOX: William Don, New York, assignor to William White, White Plains, N. Y. Filed Sept. 1, 1883.

288,788. REVOLVING GUARD FOR LOCOMOTIVE COW-CATCHERS: John D. Fisk, Hartford, Conn. Filed Feb. 5, 1883.

288,789. CAR-COUPLING: James Henry Flood and Henry Frederic Knoder, Cardington, Ohio. Filed March 3, 1883.

288,792. FREIGHT-CAR: Abram Goodrich, Auburn, N. Y. Filed Nov. 8, 1882.

288,797. CAR-COUPLING: Joseph V. Hartman and Albert Wetzel, Jr., Linwood, Ohio. Filed April 28, 1883.

288,800. CAR-COUPLING: Chancey C. Haskin, Waltham, Iowa, assignor of two-thirds to James E. Haskin and Erwin D. Mereness, both of Westside, Iowa. Filed June 20, 1883.

288,816. CAR-COUPLING: Abner Johnston, Cornwall, assignor of one-half to Nelson Secor, New York, N. Y. Filed Aug. 21, 1883.

288,817. CAR-WHEEL: Edward J. Kelly, Monongahela City, Pa. Filed Aug. 2, 1883.

288,832. SPARK-ARRESTER: Joseph Meier, Plainfield, N. J. Filed March 8, 1883.

288,848. STEAM-HEATING APPARATUS FOR RAILROAD ROUND-HOUSES: Eugene F. Osborne, St. Paul, Minn. Filed March 31, 1883.

288,890. CAR-AXLE BOX: John G. Thomas, Little Falls, N. Y. Filed Sept. 13, 1883.

288,903. RAILWAY-TRACK CLEANER: Geo. W. Willey, Athol, Mass. Filed Nov. 9, 1882.

288,907. RAIL-SUPPORTER: Robert H. Wingate, Wesson, Miss. Filed April 27, 1883.

288,914. DRAFT-REGULATOR: Henry D. Bannister, Chicago, Ill., assignor of one-half to Roland H. Smith, Pittsburgh, Pa. Filed March 16, 1883.

288,925. CAR-COUPLING: George Costolo, Mary Jane Costolo, and Alfred Johnson, Uniontown, Pa.; said Johnson assignor to said George Costolo. Filed Sept. 19, 1883.

288,926. SLEEPING-CAR: Lawrence Creighton, Cincinnati, Ohio. Filed May 15, 1883.

288,928. CAR-COUPLING: Fieldon B. Cunningham, Burlington, Kans., assignor of one-half to Chas. O. Brown, same place. Filed Aug. 28, 1883.

BEARING DATE NOVEMBER 27, 1883.

288,969. CONTRACTING CAR-WHEEL CHILL: Jacob N. Barr, Milwaukee, Wis. Filed July 16, 1883.

288,988. CAR-DOOR LOCK: Joseph H. Fisher, Deerfield, Ill. Filed March 14, 1883.

288,999. CAR-COUPLING: John H. Harrod, Huntsville, Ohio. Filed June 4, 1883.

289,001. ROLL FOR ROLLING CAR-COUPLINGS: Jos. W. Higgs, Sharon, Pa. Filed May 16, 1883.

289,002. CAR-COUPLING: Isaac Holland, St. Peter's, Mo. Filed Sept. 26, 1883.

289,006. CAR-SHIFTER: William H. Lind, Williamsport, Pa. Filed Sept. 29, 1883.

289,008. AUTOMATIC CIRCUIT-BREAKER FOR RAILROAD-SIGNALS: Malcolm W. Long, Hyde Park, Mass. Filed April 16, 1883.

289,017. RAILWAY-VELOCIPEDE: George W. Miller, Kalamazoo, Mich. Filed April 13, 1883.

289,040. COMBINED RAILWAY AND CATTLE WATER-SUPPLY: Charles P. Sykes, Calabasas, Ariz. Filed Oct. 31, 1883.

289,049. CAR-COUPLING: John A. Whittemore, Springfield, Mass. Filed July 17, 1883.

289,091. AUTOMATIC CAR-BRAKE: William B. Guernsey, Norwich, N. Y., assignor, by mesne assignments, to The Torrey Automatic Brake Company, of New York. Filed Oct. 20, 1881.

289,128. CAR-BRAKE: James O'Donnell, San Francisco, Cal. Filed July 14, 1883.

289,142. CAR-WHEEL: Edmund K. Righter, Oswego, N. Y. Filed Aug. 24, 1883.

289,160. CAR-TRUCK: James E. Squire, Glencoe, Ontario, Canada. Filed April 26, 1883.

289,172. CAR-COUPLING: Benjamin Taylor, Morrillton, Ark. Filed Oct. 12, 1883.

289,226. FUEL-FEEDING DEVICE FOR LOCOMOTIVES: John W. Cloud, Altoona, Pa. Filed March 7, 1883.

289,228. CAR-COUPLING: John Cochran, Jr., Millwood, assignor to himself, and John A. Wirick, Clarksville, Mo. Filed June 26, 1883.

289,244. RAILWAY-GATE: Calvin A. Ely, Taylor Hill, Ill. Filed June 14, 1883.

289,247. GRAIN-CAR DOOR: Benjamin H. Gatton, Bath, Ill. Filed May 14, 1883.

289,254. SAFETY-SWITCH GUARD: Henry Harmer, Southampton, Ontario, assignor to Frederick Broughton, Hamilton, Canada. Filed Aug. 16, 1883. Patented in Canada Aug. 22, 1874, No. 3,770; extended Aug. 20, 1879, No. 10,375.

289,265. HEATING RAILWAY-CARS: Michael Hurly, Quebec, Quebec, Canada. Filed Feb. 26, 1883. Patented in Canada May 4, 1882, No. 14,702.

289,298. RAILROAD-RAIL JOINT: Jacob E. Moeller, Centralia, Ill. Filed June 25, 1883.

289,313. BRAKE-SHOE: Gustavus B. Simonds, Sedalia, assignor of one-half to Archibald J. Robertson, St. Louis, Mo. Filed June 20, 1883.

289,314. CAR-BRAKE: George A. Small, Jeffersonville, assignor to Josiah Bettis, New Albany, Ind. Filed April 18, 1882.

289,346. SLEEPING-CAR: Henry S. Hale, Philadelphia, Pa. Filed Aug. 9, 1883.

289,357. CAR-COUPLING: Joseph K. Nyce and Irwin C. Hunsicker, Shippack, Pa., assignors to themselves, William D. Heebner, David D. Nyce and Isaiah A. Anden, all of same place. Filed July 6, 1883.

Barry's Steam Valve.

THOMAS P. BARRY, Stillwater, New York, believes that his steam valve, patented October 2, 1883, can be used on locomotives as a throttle valve. His invention has relation to valves for regulating or controlling the flow of steam under pressure; and it consists in the detailed construction and combination of parts of a valve, suitable for all purposes for which valves of this class are usually employed.

The claim includes the combination of a valve-chest having ports, a valve-seat made in one piece with the bottom of the valve-chest, and having ports at right angles to one of the ports of the chest; a sliding valve consisting of a sleeve, yoke, shoulder, valve-stem and spring, projecting with its lower free end down into a circular recess in the top of the valve-chest, and adapted to fit the shoulder of the valve.

Railway Station Indicator.

A PATENTED invention of Parker Price, Sandy Run, Luzerne county, Pennsylvania, has relation to railroad station indicators. In the absence of illustrations, a description must necessarily be brief, but the inventor will give further particulars in answer to inquiries.

Described generally, the invention consists of a case or cabinet containing two outside rollers, and two other rollers working inside or within them. On one of the outer rollers, a tape with the names of the railroad stations along the road between given points printed thereon or otherwise affixed thereto, is wound and arranged to be unwound therefrom and wound upon the other outer roller, to display the names of the stations through a window of the cabinet as they are reached, and thus save the conductor or brakeman the trouble of calling out the names of the stations, as is now practiced.

Under the present system of shouting the names of stations just before they are reached, the din of the moving train is alone sufficient to drown the voice of the conductor or brakeman, and, in addition to this, very few of the persons detailed to perform this duty articulate distinctly; hence many mistakes and much confusion result from the present system. In Mr. Price's improvement, the cabinet is placed in the front of the car, or one may be placed at each end of the car, to save turning the car or causing the passengers to turn in their seats to see the name of the station displayed.

A gong may be struck to attract the passenger's notice, or the name may be called at the time it is displayed by the conductor or brakeman, or other attendant. Two outer rollers are used, in order that the printed tape may be wound from one to the other to display the station in proper succession on both the outgoing and incoming trips.

The claim on the Price railway station indicator reads about as follows:

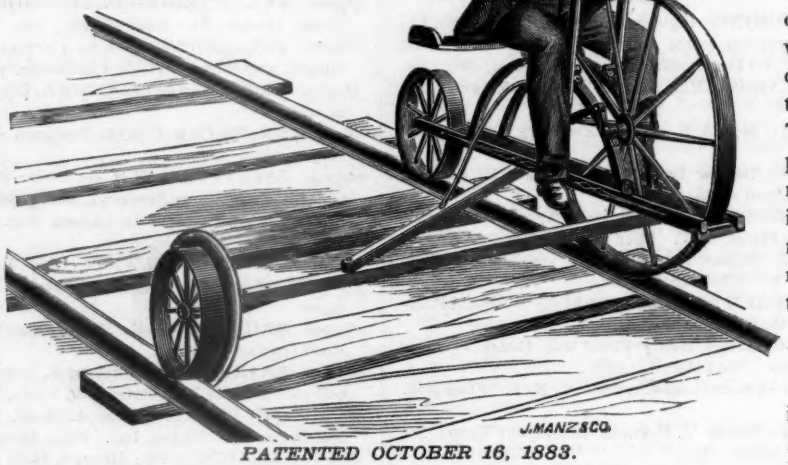
1. The combination of an inner roller upon a shaft having bearings in the end walls of a cabinet and an outer or encircling cylinder or roller having a friction face on one end and a friction groove near the other end, with a disk having an opposing friction face, a spring pawl and ratchet on its adjacent face, and a series of stops near its periphery on the other face, a sliding and locking rod for bringing the disk and outer cylinder into contact and holding them locked, and a spring-stop catch and an operating spring for moving and stopping the rollers and disk when in engagement.

2. In a station indicator for passenger cars, the combination, with the rollers having the friction grooves near one of their ends, and mechanism for rotating them, of the sliding push-rods having pivoted arms which engage the friction grooves for sliding the rollers into engagement with their respective disks, and springs for holding the disks and rollers out of engagement, and inclined stops on the push rods, and inclined projection on the cabinet walls, to lock the rollers and disks in engagement.

The advantages of an indicator of this kind are obvious.

The Eclipse Railway Velocipede.

THIS device, manufactured by E. B. Preston & Co., Chicago, Ill., is clearly shown in the cut. The advantages claimed for it are simplicity of structure, lightness of weight, 100 pounds; it can be easily lifted from the track by one person; the highest practical rate of speed attainable with the least expenditure of manual force; the force is applied direct to the driving wheel, there being no cog gears; it has but few parts, and is, therefore, not liable to get out of order; it can be worked by both the hands and feet, or by either separately; and it will carry either one person, as shown in the cut, or two, one on each side of the wheel, and both in convenient position to work the lever. The Eclipse velocipede has been thoroughly tested, and is highly indorsed by mechanics and railroad men competent to judge of its merits.



PATENTED OCTOBER 16, 1883.

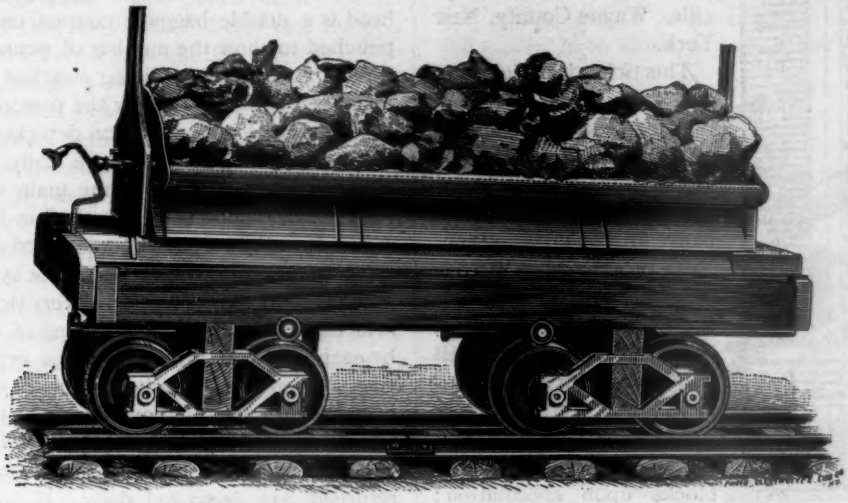
THE ECLIPSE RAILWAY VELOCIPEDE.

THE car coupling invented by Christian H. Zimmerman, of Le Roy, Ohio, is so constructed that the pin is raised by a lever, and held raised in position for coupling by means of a block sliding inside the drawhead. It is a self-coupling apparatus. All the brakeman need do after the cars are slacked together so as to loosen the pin, is to raise the lever. When the car is pulled ahead, the pin is raised a little higher, and the lever thereby released, and at the same time held in position for coupling; so that the person attending to the coupling can stand at one side out of danger.

NEW CAR-AXLE LUBRICATOR.—A patented invention of William J. Jackson, Osceola Mills, Cleary county, Pennsylvania, consists of a car-wheel axle lubricator in which the hub is strengthened, the axle continuously and uniformly lubricated, the escape of the lubricant and entrance of dirt are prevented, and a collar is provided for connecting the wheel and axle, the same being lubricated and inclosed as explained by the inventor, together with all details of the invention, in answer to inquiries addressed to him.

Fallon's Universal Dumping Car.

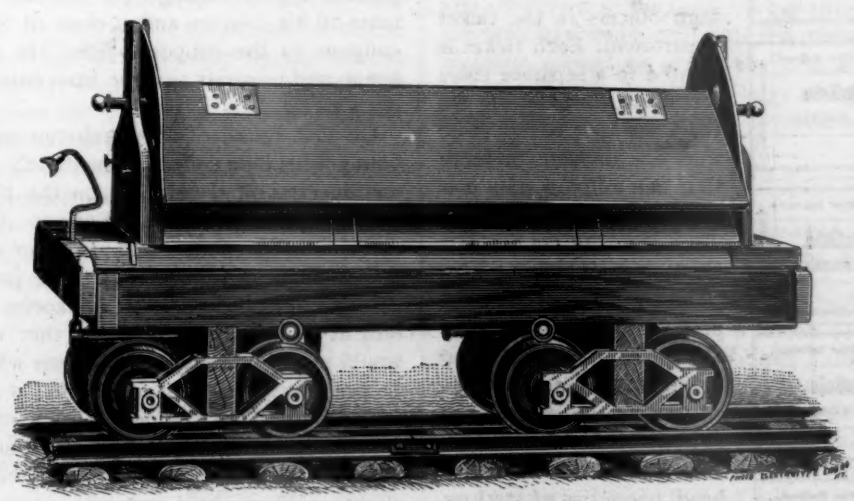
THIS invention, patented in the United States October 30, 1883, is one of great interest and importance. It is the device of Mr. William Fallon, of Newburgh, New York, who has applied for patents in Canada, England, France and Germany.



FALLON'S DUMPING CAR—LOADED.

He claims for it that it will dump the load as required, all on the one side of the car, or on the other, or half on one side and half on the other; or in the event of running along the edge of a precipice, in ballasting a road, will dump half the load on the inside, and retain the other half of load on the car, to be placed elsewhere. Moreover, the new car will dump the load while at rest on the track. In the matter of building roads, it will be found a great labor-saving machine. The invention is also applicable as a grain or coal car, as it transfers bulk immediately, such as coal (large or small), earth, rock, ore, ballast, salt, and grain of all kinds. Its utility, therefore, in transferring grain to the seaboard without the aid of elevators, promises to be of the greatest importance in the saving of time and labor. In the repair of washouts on railroads, and similar operations, the Fallon car would be found of great service, because it delivers its load while in motion at the rate of from three to five miles an hour. Hence the engineer can dump the whole train at once or in detail, and the contents of the whole train can be dumped in any particular spot. For analogous reasons, the car would be of the greatest service in repairing crevasses, and such other similar purposes which require rapid filling in. Several railroad men and eminent engineers have passed a favorable opinion on the car already, and its extensive use in the near future seems to be assured.

The principle of its construction, is changing an ordinary car or gondola truck into a dumping car, by means of two pinions clamped on the inner axles, with two intermediate wheels geared into two racks, which slip in and out of gear on a sleeve axle suspended from the bottom of the car by proper fastenings; thereby, when thrown in gear with said racks, elevating the dumping platform in the center line, and thus dumping the load, which falls by its own weight.

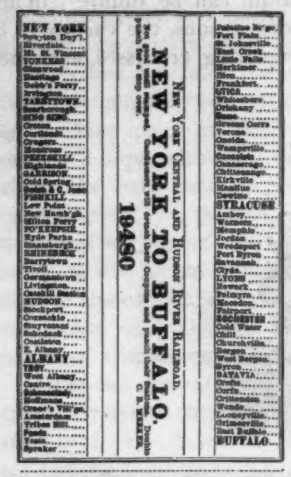


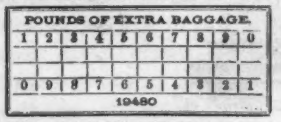
FALLON'S DUMPING CAR—EMPTY.

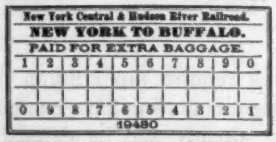
For further information, address William Fallon, Newburgh, New York.

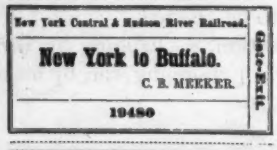
A Registered Passenger Ticket for Railroad Companies.

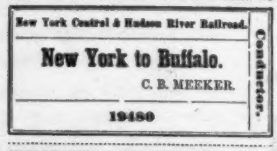
LETTERS PATENT were issued November 13, 1883, No, 288,594, for a registered passenger ticket, to James H. Mandeville, trustee, of Washington, D. C., the inventor thereof being John M. Reynolds, of Pultneyville, Wayne County, New York.

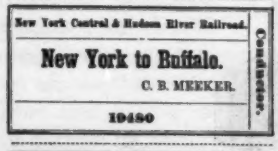


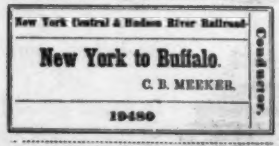


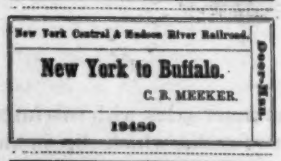


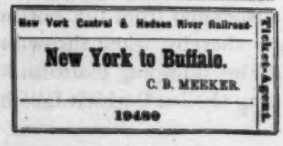












This ticket is designed to check all frauds put upon the ticket department of a railway company, whether by the traveler or by the inside officials of the company. Its object is to enable a company to secure against spoliation the entire revenue of its passenger traffic, including all moneys paid for excess baggage. Further, to abolish the scalping business, and the sale of tickets in large blocks upon speculation; to prevent the printing of tickets or passes not accounted for, and the use of a ticket more than once.

Mr. Reynolds registers the ticket before it is placed upon sale, just the same as a Government bond is registered. This will check the high officers in the ticket department. Each ticket is printed in a separate color for each division of the road, and if it covers more than one division or more than one railroad, then it is printed in combined colors. This prevents counterfeiting, and the changing of a ticket by means of chemical process, although counterfeiting, or the duplicating of tickets, would be detected by the registry of the ticket.

Mr. Reynolds's ticket-head has a list of stations on it from starting point to destination, which, like the rest of the ticket, is printed in different colors, provided the ticket is for more than one railway division. To illustrate: The New York Central and Hudson River Railroad has three divisions, New York to Albany, Albany to Syracuse, Syracuse to Buffalo. Any ticket from New York to Albany would be printed on a blue blank, thence to Syracuse on a white blank, and thence to Buffalo on a red blank. A ticket from New York to Buffalo would be printed upon a blank having all three colors.

Mr. Reynolds provides his ticket with a coupon for every employé who handles it, namely: the station ticket agent, entrance gateman, conductor of each division, and the exit gateman. Between this last coupon and the ticket-head is a double baggage coupon, one part of which is punched to show the number of pounds of extra baggage carried, the other part being punched to show the amount of money paid therefor, by the passenger.

The several coupons when detached are independently accounted for by each employé, daily, to a coupon department, which is attached to the main offices of the company. The coupons would all flow into the main office regularly, unless a passenger stopped over on his journey. As they pour into the coupon office by the thousand, there being at least four coupons to every ticket, their separation is facilitated by the coupons being of different colors, and by each day's return of coupons being kept separately. Every ticket has the same number of coupons on it unless it goes over more than one division; then there are additional coupons for each division conductor. These coupons, after assortment according to number, if found all returned, are destroyed daily. If not all found, it is at once known precisely upon what employé to lay responsibility for any failure to perform his official duty.

This, for example, is the operation of a through ticket from New York to Buffalo. The station ticket agent upon its sale to a passenger, tears off his coupon and drops it into the cash drawer. At close of the day he sends his cash to the main office with his coupons enclosed as vouchers. He is checked on fares received. When the passenger goes through the entrance gate, the gateman tears off his coupon, and at close of the day he sends his coupons to the coupon office. He checks the station agent, and prevents any one from entering the train without a ticket.

On first round of the conductor out of New York, he tears off his blue coupon immediately on its presentation, and punches off the stations on the blue portion of the ticket-head, or from New York to Albany. It may be claimed that a conductor could never do all the punching required. It is answered that a passenger holding a through ticket would take an express train, which stops only at principal stations. In that case, the conductor would punch off only those stations where the train stops. In practice, however, it may be found sufficient to punch only the terminal stations of each railway division. If a passenger desires to stop off he must notify the conductor, who then doubly punches the station where he alights. When the journey is resumed the conductor is apprised of a stop off, as his blue coupon already has been removed. He then cancels the stop off by a third punch, and just before reaching Albany he makes three more punch marks on the ticket-head opposite Albany. This cancels the ticket-head from New York to Albany, and it is of no further value to the passenger for securing another ride on his ticket for any part of the distance over that division. The punching is done in spaces arranged opposite to each station, in order to preserve from mutilation the printed matter on the ticket-head. There is an extra row of punching spaces wherein the baggage

agent at any station indicates that a passenger has withdrawn his baggage from the custody of the company.

Upon leaving Albany the new conductor at once after the handing up of the ticket, tears off the white coupon between Albany and Syracuse, and punches off the stations on the white portion of the ticket-head wherever the train stops in going over that division; and just before reaching Syracuse he puts three more punch marks on the ticket-head opposite that station, to indicate that the passenger has been carried clear over another division.

Upon leaving Syracuse a new conductor tears off the red coupon, and punches off the stations on the red portion of the ticket-head between Syracuse and Buffalo; but on his last round he takes up the canceled ticket-head and hands back to the passenger the exit gate red coupon with a part of the double baggage coupon (provided a punch mark thereon indicates that the traveler has excess baggage) with which to show the station baggage agent that the required sum was paid for carrying his baggage, or that it was not paid for one distance but carried a farther distance. These red coupons are surrendered to the exit gateman and the baggage agent, who return their coupons daily to the coupon office. The exit gateman is provided with a punch set with figures, to punch out the number of his station upon the exit gate coupon wherever a passenger goes through this gate, but who retains his ticket. This will prevent a passenger from improperly using his ticket a second time. The exit gateman could make a conductor responsible for permitting a traveler to ride free, or to ride a farther distance than he paid to ride.

Mr. Reynolds is the first inventor of a registered passenger ticket, and of a local ticket (that is, a ticket isssued by a single railway management) with coupons, and of a ticket-head with names of stations upon it; and of a ticket in different colors for each division of the line, or each connecting railroad covered by one ticket; and to devise a system of independent accountability by the various employés of a company, whereby each one checks not only his own operations but as well the acts of all other employés who handle the ticket.

Manifestly, the use of this ticket would enable a railway company to dispense with road checks, conductors' checks, duplex tickets, and all other ticket safeguards of that character now in use, and would enable a passenger always to hold his ticket until he had reached his destination.

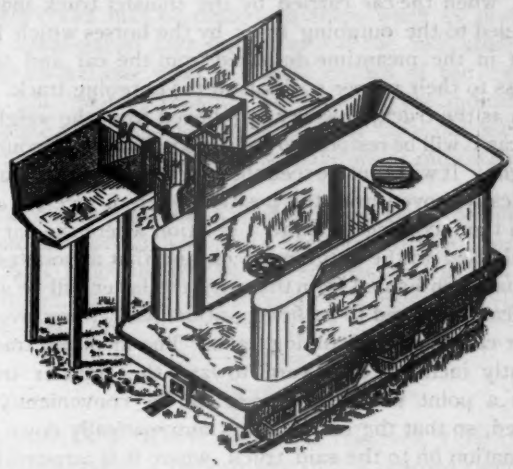
Stock Car.

THE stock car invented and recently patented by James Clark Weaver, of Cutler, Carroll County, Indiana, has been assigned to Acker & Felthoff, of Darcy, in the same county and State. It consists of improvements in the construction of stock cars, and contrivances for feeding and watering the stock, and also for partitioning the car, whereby it will be more substantial, the stock may be fed and watered without the trouble and delay of removing them from the car, and they may be separated at any desired place along the car.

The claim covers certain spring racks located within the car and along the sides to receive the hay stuffed in through the openings of the sides; also the combination, with a stock car, of a partition suspended on pivots, and having pivot bearings adjustable along the beams of the car.

Device for Coaling Locomotive Tenders while in Motion.

MESSRS. M. H. LANTZ and N. T. Clivenger, of Marionville, Lawrence county, Missouri, believe that they have overcome the hitherto supposed impossibility of taking coal on the tender of a locomotive while the train is running, and are the patentees of a device which, they claim, will enable this to be done, while the train is moving at the rate of from fifteen to forty miles an hour.



The device is simply a large tube attached to the tender by hinges, and is raised or lowered by a lever. There is no need of any elevated track or expensive coal houses, but simply a platform by the side of the main track, and parallel to it, which is kept supplied with coal. As the train approaches it the tube is lowered, by operating the lever. As the train passes, the tube scoops in the coal and conveys it to the tender, when the tube may again be elevated, the train being all the time in motion. The platform should be about the height of the top of the tender, along the track, and large enough to hold any desired quantity of coal. One could be built at every convenient coaling station.

Wharton's Automatic Arrangement for Transferring Cars from one Track to Another.

AN invention of more than ordinary importance has been patented by William Wharton, Jr., of Philadelphia. It consists of mechanism whereby a transfer truck on receiving a car from one track will be automatically transferred to a position where the car can be wheeled on to another track, the truck on being relieved of its load returning automatically to its first position, ready to receive another car. The subjoined brief description illustrates its application to the terminus of a street railway, with the outgoing slightly lower than the incoming track. At right angles, or nearly so to the tracks, but five inches lower, is an inclined track, to the rails of which are adapted the wheels of a transfer truck, the movement of which is limited in both directions by bumper posts; or any other available devices may be used for limiting the movement of the truck. Two rails are secured to the transfer truck, and when the latter is in contact with the first bumping post, these truck rails will coincide with those of the incoming track; but when the truck is in contact with the

second bumper post in the opposite direction, the said truck rails will coincide with those of the outgoing track. A rope or chain is attached at one end to the transfer truck, passes over a pulley and down a pit, and carries at its lower end a weight which maintains the said truck in its most elevated position when unloaded. The weight is such, however, and the track is so inclined that when a car has been transferred to the truck its additional weight will cause the same to slowly descend the inclined track, and to raise the weight until the the truck reaches the second bumping post, when the car carried by the transfer truck may be wheeled to the outgoing track by the horses which have been in the meantime detached from the car and taken across to their proper position on the outgoing track. As soon as the truck, however, is relieved from the weight of the car, it will be restored to its first position by the counter-weight. It will thus be seen that the transfer truck is automatically moved from the position where it receives a car from the incoming track, to a position where the car can be wheeled to the outgoing track, and that as soon as the car has been hauled from the truck the latter will be automatically restored to its first position, ready to receive another car from the incoming track. The incoming track is slightly inclined downward toward the transfer truck, from a point where the horses can be conveniently detached, so that the car will pass automatically down the inclination on to the said truck, where it is arrested by a projection or projections on the same. It is not essential that the truck should be counter-weighted in the precise manner described, but in most cases the plan described will be adopted.

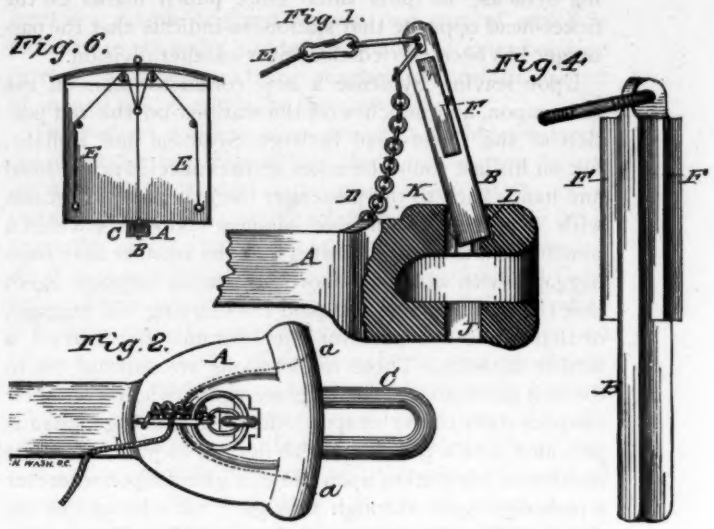
The needed inclination of the tracks amounts to a few inches only. This arrangement is in use at the Sands street station of the Brooklyn City Railroad, where there are three of these automatic transfer tables, which are adapted to three sets of incoming and outgoing tracks. The considerable saving in time, and the avoidance of all expense for attendants is there shown very clearly.

Woodward's Car-Coupling.

THIS invention, by Ferd. Woodward, No. 708 Eleventh street, Sacramento, California, relates to that class of car-couplings in which the common link and draw-head are employed in automatically coupling up railroad trains, and where the coupling-pin may be operated from the side or top of the car.

Fig. 1 is a side elevation, showing a portion of the draw-head cut away, to show the interior of the same, and the position of the coupling-pin when it is withdrawn to uncouple the car or draw out the link. Fig. 2 is a plan view, where the pin is dropped in position, with the wings resting upon the link, and by its weight holds the link at its outer end above horizontal. Fig. 4 is a perspective view of the coupling-pin. Fig. 6 an end view of a box car, to show the position of the cord by which the coupling-pin may be operated from the side or top of the car. *A* represents the draw-head; *B* the coupling-pin; *C* the coupling link; *D* the coupling-pin stop chain; *E* the coupling-pin cord by which the coupling-pin may be operated; *F* the rest wings of the coupling-pin; *J* the coupling-pin mortise; *K* the wing slots; *L* the rest notch to hold the pin ready for coupling.

With the link *C* held at the proper elevation and direction by the weight of the pin *B* and the form of the link seat, as in Fig. 2. The opposite car to be coupled will have the pin raised, as in Fig. 1, and resting in the notch *L*, where it will always catch when the pin is lifted either by the ring in the top of the pin, or by pulling on the cord *E*, at the top or either side of the car. The tension and



weight of the stop chain *D* in checking the upward motion, throws the top of the pin back, and the lower end forward into the rest notch *L*. As the moving car comes up, the link *C* passes into the draw-head, the bumpers come together, and the jolt of the concussion throws the top of the pin forward, causing the lower end to slip out of the rest notch, and the pin to drop down through the mortise *J*, the rest wings *F* dropping upon the link, coupling the cars.

Various other devices can be used to lift the pin on flat or other cars, if necessary. To prevent coupling, drop the ring at the end of the cord over a knob or hook, or drop the coupling-pin in place when the link is out.

The Rosenfield Railway-Car Gate.

IN many classes of railway cars, and particularly in those used upon the elevated and other city railways, it has been found necessary, in order to prevent passengers from falling from the train, and also to prevent persons from attempting to get off or on a car while in motion, to provide the entrances to the car platforms with gates, by which they can be closed except at the proper times. These gates are usually in charge of a guard or attendant, whose duty it is to close the gates before the train commences to move, and to open them only after the train has come to a full stop. As there is usually but one guard or attendant stationed between each two adjoining cars, it follows that to open or close both gates he must pass around from one to the other of the adjoining platforms. It is the object of the Rosenfield railway car gate, among other things, to provide means by which the guard or attendant can, without changing his position, open or close both gates simultaneously and with the least possible delay. To that end, one feature of the invention consists in providing the gates with connections so arranged that any two adjoining gates can be simultaneously opened or

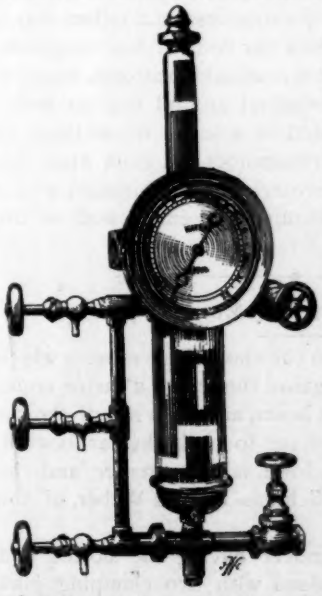
closed by the guard, while standing in the passage way leading from one of the cars to the other.

In order to adapt cars to run upon a track in which there are abrupt or comparatively abrupt curves, which is the case with most city railways, it is necessary that the platforms should be so constructed as to leave considerable open space at the sides between the platforms of two adjoining cars, when they are standing upon a straight track. This open space has frequently been the cause of serious accidents to persons who have been crowded from the station platform, and fallen between the platforms of the cars. Another object of the Rosenfield railway car gate, is to provide means by which this danger shall be avoided; and to this end another feature of the invention consists in providing a gate which can be operated, in connection with one of the platform gates, to close this space and prevent persons from falling or being crowded into the same while the train is standing at a station.

These important objects commend attention to the new car gate, on which letters patent have been issued to William W. Rosenfield, of New York city. Our space does not admit of a detailed description, which can be obtained from the patentee, Mr. Rosenfield, at the Home Vapor Bath Company's office, 1238 Broadway.

High and Low Water Indicator and Alarm for Steam Boilers.

THE accompanying cut illustrates Edward J. Coffin's High and Low Water Indicator and Alarm for Steam Boilers, which is claimed to be the most durable and reliable indicator of any yet patented and placed in the market.



This indicator being constructed wholly of iron and brass, and involving the simplest mechanical principles consistent with the proper performance of its work, is not liable to get out of order. The dial representing in inches the height of the water above the crown sheet, or flue line, gives a more correct registry by means of the dial hand, of the water in the boiler unaffected by foam, than the common glass gauge so largely in use at the present time; while it completely obviates the liability of breakage, which, with the best glass gauges is a very frequent occurrence, and is always a source of vexation as well as an item of cost. It is simple in construction, cheap, and as to its durability, one will last a life-time. It may be attached to any steam boiler—stationary, locomotive, or marine—and it will correctly indicate the height of the water twelve inches above the crown sheet or flue line. If it is attached above the crown sheet, or flue line, add the number of inches which it is placed above to the indication of the dial-hand on the dial-face, and the registry is ascertained.

The alarm mechanism is simple and trustworthy, giving a steam whistle alarm if the water is too high or too low in the boiler. When attached to locomotives or steam fire-engine boilers, the try cocks and the alarm mechanism are not necessary. The try cocks are attached to the cylinder of the indicator by means of steam pipes and Ts, and are only necessary when there are no try cocks on the boiler, and the indicator is attached to the boiler in the place of a "stand pipe" or "water column." The cylinders of all the indicators are tapped and plugged, and the try cocks may be placed on them when so desired. The steam-gauge may be placed on the indicator just above its dial case when it is used instead of the "stand pipe" or "water column," thus making the indicator a complete piece of boiler furniture. At night one gas jet will then serve to read the steam and water indications of the boiler.

This device has been in successful operation on several boilers in Central New York for more than a year last past, and is giving the best of satisfaction. It was patented Oct. 2d, 1883. The inventor is a resident of Little Falls, New York.

Automatic Railroad Signal.

CHRISTIAN M. RAFFENSPARGER, Hanover, York county, Pennsylvania, is the inventor of the railroad signal referred to in the following article. His patent is dated November 6, of the present year. G. Milton Bair, also of Hanover, has been assigned one-half interest in the invention, which is designed for use at railroad crossings to indicate the approach of a train, and is of that class of signals in which the signal is given or operated by the engine as it approaches a crossing. Its principle is the employment of a jointed lever and a signal staff connected thereto, adapted to be depressed and set by passing trains, combined with devices, connected, respectively, to the lever and staff, for breaking the shock of impact of the train thereon. The inventor does not restrict himself to the use of a staff having a flag at its end as the signal, as any device having enough area to make it sufficiently conspicuous for the purpose indicated, may be substituted. He believes that his invention affords a simple, effective, and cheap appliance for railroad signaling, and that its use at crossings will result in much saving of life and property. At many crossings a railroad company is not justified in employing labor for signaling purposes, and the object of Mr. Raffensparger's invention is to supply an automatic appliance which may be relied upon as an efficient substitute. He will send full particulars to inquirers.

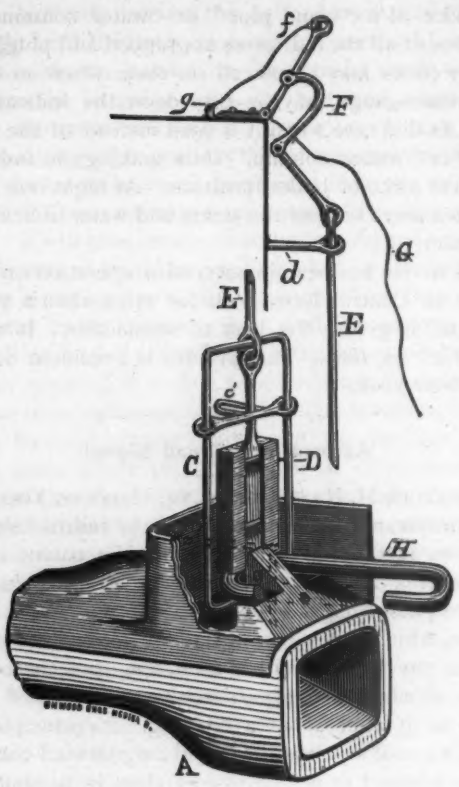
Morrison's Car Coupling.

THE operation of the automatic car coupling, invented by R. T. Morrison, of Medina, Ohio, is as follows:

The coupling-link when held at one end by a draw-head, may be coupled at the other end by thrusting it into the chamber of the draw-head, where it will slide up on the incline of the pin *A*, and push back the weight *D* and drop behind the said coupling-pin, the weight *D* immediately swinging back to its former position, and holding the link from disengagement with the said pin.

It will be seen that the back part of the bottom of the

chamber, from the front part of the pin *A* backward, is about horizontal, so that the weight *D*, hanging just above the end of the link, would hold the said link in nearly a horizontal position, and will guide it into the chamber of an opposite and similar draw-head. If the opposite end of the link were depressed, it would only pry upon the weight *D*, and cause it to slide up on the rod *C*, and without any disengagement of the link and pin; also the flaring shape of the said chamber gives a free lateral motion to the link beyond its requirements in actual use. The weight *D* cannot slide upon the rod far enough to admit of a disengagement of the coupling-link and draw pin. The combination of the lever *F* and the upper part of the rod *E*, forms a toggle joint, which by the gravity of the parts, passes a straight line and rests against the car as shown, preventing the frame *C* from being raised in any manner by the link. When it is desired to disengage the said link and the said pin, it may be done by pulling on the cord *G*, which by the means of the lever *F* and the rod *E*, will raise the frame *C*, which in turn will raise the link above the pin *A*, and entirely disengage the said link. When one end of the link is disengaged or uncoupled, the engagement of the other end of the link with the opposite draw-head, holds the link in nearly a horizontal position, and ready again to enter a draw-head and be coupled. Of course the chamber might be covered, except so much of the space as is necessary for the operation of the frame *C*, and the weight *D*. The back side of the draw pin *A*, may be faced with iron or steel, in such a manner that the facing may be renewed when required, and protecting the pin proper from all wear. This device may be attached to an old or existing draw-head, or a new draw-head may be inserted or attached to the bar, with the face or draw-head here deseribed.



The Guillaume Sleeping Car.

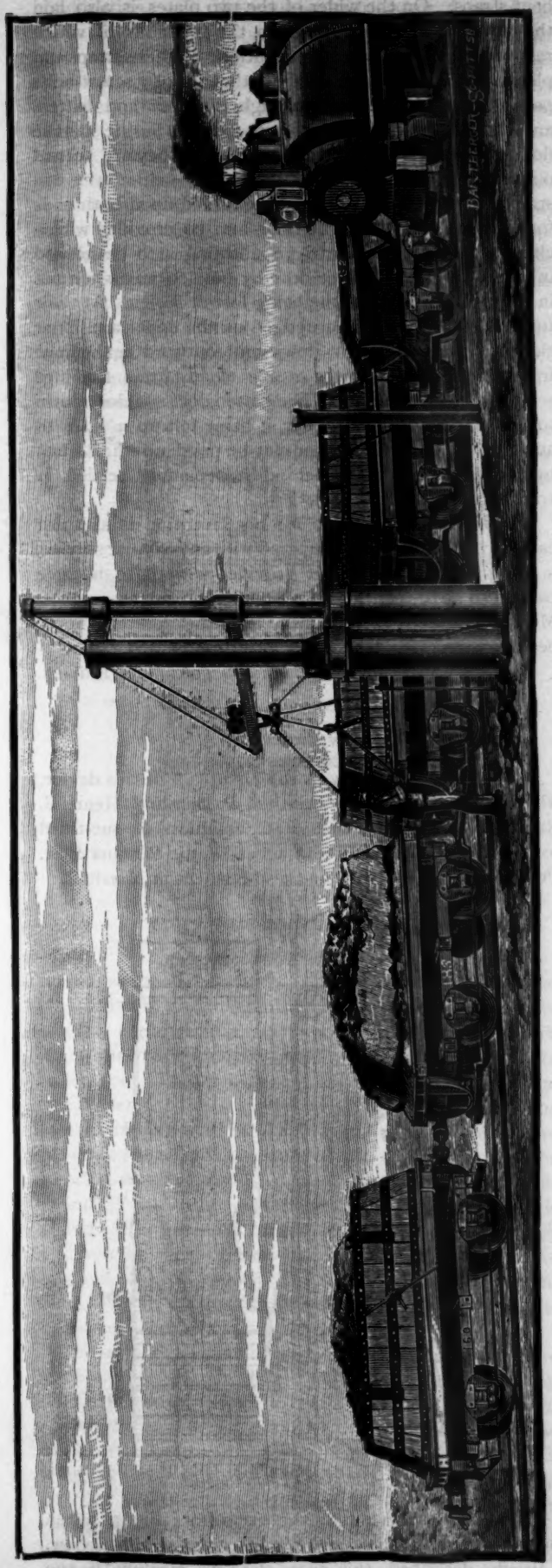
THIS is an invention of Henri Guillaume, of Washington, D. C., who has secured United States letters patent on it. Its primary object is the isolation of the compartments. Hence absolute privacy to the individual or family occupying a section, providing all accommodations necessary to comfortable sleeping apartments, constructing the berths or beds so as to convert the sleeping apartment into a parlor or saloon section, and, finally, providing a promenade all around the car for the occupants of the several sections. The means by which these desirable objects are provided, are indicated briefly in the claim, herewith presented in a shortened form. Letters addressed to the patentee will be promptly answered.

In a compartment car, a series of compartments each provided with lavatory and closet, and having their entrances and exits alternately from opposite sides of the car by a stairway and landing or a veranda; a series of compartments each provided with lavatory and closet, lockers for the bed supports and bedding, and having their entrances and exits alternately from opposite sides of the car by a stairway and landing or a veranda; a series of substantially octagonal sections each having a lavatory, a closet, and an entrance at the intersection of the several octagons, which form landings at that point; a series of substantially octagonal sections each having a lavatory, a closet, a locker for the bedding and berths, and an entrance at the intersection of the several octagons, whereby landings are formed for said entrances at that point; a series of substantially irregular octagonal sections having their entrances formed by one of the smaller faces of the octagon at the intersection of two of the sections, whereby landings are formed for said entrances; in a railway car, a car platform combined with a car body of less longitudinal and transverse diameters than said platform, whereby a passage or veranda is formed all around the car body; and a railway car composed of a series of sections or compartments having their entrances and exits upon opposite sides of the car alternately, in combination with a veranda or balcony surrounding the entire body of the car, as described.

Spengler's Car Mover.

THIS invention relates to the class of car movers which are adapted to be placed against the rear of a car, or under the center, against a cross beam, and on a rail of the car track, and operated by a lever to push the car forward. John Spengler, of Clarion, Iowa, is the patentee, and the assignor of one-half to Nicholas Francis Weber, of the same place.

The claim is the car mover having the slotted and wedge-shaped beam combined with two clamping jaws between which it is arranged, and the edged tongue adapted to bear on top of a rail, when the beam is forced against the said jaws; the combination, with the beam and clamping jaws, of the sliding bar adapted to be attached to the rear sill of a car, and the lever having links cnnnecting it to said bar, and the combination of the adjustable beam and clamping jaws, the sliding bar and lever for operating the same, and a clamp pivoted to the sliding bar and adapted to be attached to a part of a car, whereby the mover may be adapted to cars of different heights.



The Gartside Wrought Iron Dump Car.

THE accompanying cut represents the Gartside improved wrought iron dump car, now in practical use at the Lucy furnaces, Pittsburgh, Pennsylvania. This company has eighty-two cars and twenty-five boxes or chills, and ship on an average sixty cars of furnace slag per day, of five tons each, or three hundred tons per day. It is hauled from two to sixty miles as required by the Alleghany Valley Railroad Company, who use it for ballast to stop land slides, making ground for sidings, etc. The expense of this work to the furnace company is one locomotive with two crews working twelve hours each, consisting of engineer, fireman, conductor and one brakeman, who also handles the metal and coal. In unloading, three men dump a train of thirty cars in twenty minutes. The average repairs are less than those necessary to wooden cars.

The Gartside car in its present perfect state, is the result of six years' experimenting at an outlay, as given by the inventor, of over one hundred thousand dollars. It costs no more than an ordinary casting, and will stand all the expansion and contraction that can be put on it. The first one made has effected a saving of five hundred dollars for the first year, and is as good as new. Being very simple in construction, no tools are required to repair it but a drill press and a forge. Any part can be replaced without interfering with any other part. The car weighs 10,390 pounds, and the box weighs 3,590 pounds; total weight, 13,980 pounds. It sells for $612, or about 4½ cents per pound. The car can be made heavier or lighter as required. It is used for short hauls of pig iron, limestone, heavy castings, etc., and will carry a fifteen ton casting with ease; and is specially adapted for furnaces, rolling mills, steel works, foundries, etc., for handling hot material where wooden cars would burn; for railroad grading, tunneling, ballasting, etc. The claim is made for it that it is a great improvement on the wooden cars now in use.

In the cut the car next the engine, No. 162, represents the cars as they appear after dumping the load. The next one is empty, having the chill or bed placed and clamped in position and ready to be placed under the cinder trough, to receive its load of five tons of molten liquid slag. The next one is receiving a chill which has been taken off the next one, No. 183, by the steam crane, and showing the manner of changing the chills. No. 183 is ready to be hauled to its destination and dumped. The next or last car, No. 160, is a cold car, or one ready to have the chill removed, which the operator will effect and then place on the car next the engine, No. 162. The reader will notice that the contents of the last car, No. 160, project above the top of the chill, which is due to the expansion which takes place in cooling. The load in some cases expands 33 per cent., rising above the bed like a loaf of bread.

The chills are taken from the loaded cars and placed on the empty cars at the rate of thirty per hour, after which they are straightened, clamped and lined, which operation is performed by two laboring men at the rate of thirty per hour, at the same time keeping the yards and tracks clean. When the cars are required for hauling metal or iron of any kind, no sides are required. For stone ore and grading no bed is required, as it is more economical to build

the load by placing a wall of lumps around the outside and filling the center with fine stuff, for boiler ashes and similar light material. A stationary iron bed with hinged sides is preferable in the construction of an iron car. The principal difficulty the inventor had to overcome was to arrange the parts of iron which have no spring, in such a manner as would give the requisite spring or elasticity necessary to prevent its rapid destruction; or, in other words, when the engine strikes the end of a wooden car a hard blow, the sills and all other wooden parts give or bend, but on removing the pressure they spring back to their place, but when iron or soft steel is substituted the bend remains, and each succeeding blow makes the matter worse, until in a short time the car is knocked out of shape. In overcoming this difficulty, the inventor has combined a spring and oscillating movement, so as to make the whole car a mammoth spring, double acting, so that the pushing strain is directly opposite to the pulling strain at every part. An idea of the strength of the Gartside car can be formed from the following circumstance: By neglecting to clamp the chill to the car a leak was sprung and the contents ran around the wheels, burying them to the axle and chilling. Two locomotives were attached. After repeated pulling and pushing, it was brought out; damage, one bent axle. On another occasion a coupling broke, and four cars ran off the end of the dump track and rolled down an embankment fifty feet into the river; damage twenty dollars.

Joseph H. Gartside, 41st and Willow streets, Pittsburgh, Pennsylvania, is the inventor of the dump car named after him, and invites correspondence with persons wishing to build or use it.

W. P. Senour's Car Door and Fastening.

THIS recently patented invention relates to that class of car doors which is used in common freight cars to adapt the same to carry grain in bulk loosely; and it has for its object to provide an inner car door which will prevent the loss of grain, and means for securely fastening the same to prevent its being worked loose by jarring in transportation.

A facing of iron is secured to the side of the posts of the door frame, on their faces towards the inside of the car, and towards the doorway and on the top of the sill, to prevent wear and to provide a more secure fastening for the door bolts. The body of the door extends across the doorway, and laps on to the iron-plated inner faces of the door posts. Battens are rigidly secured to the door-body, on its outer face, for the usual purpose of securing strength with lightness, and at the same time furnishing shoulders to abut against the door posts, to keep the door from slipping endwise with the car. The door is secured in place by bolts adapted to slide into holes in the side posts. These bolts have each a peg to be struck by a hammer or anything convenient to assist in sliding the bolt when it becomes wedged. Each bolt is also turned outward at its rear end, forming an abutment to rest against a cross-key, which drops by its own weight between the forementioned bolts when they are extended into the bolt holes, to keep them in place. On the outside of the door, at each edge thereof, a plate of iron is first laid; then, at the middle of the door, a wider plate is placed. The bolts are laid on these plates and covered by bent straps. On the wider of the two plates is also laid the cross-key, and over it a strap, the two ends of which rest on the two straps above mentioned. These straps and plates are all firmly secured to the door by screw-bolts passing through them and through the door and batten, and closely drawn by screw-nuts on the inside of the door. To prevent losing the door bolts they are turned out at their rear ends, forming hooks behind the top straps. The cross key is similarly turned up at both ends for the same purpose. The door may be provided with a chain securing it to the car, yet allowing it to be housed in some convenient place near by the doorway when not in use, to prevent the same being lost or stolen. At their forward end the bolts are wedged on the upper and inner sides, to draw the door down and outward against the frame, thus preventing the escape of any grain, the lugs serving to force the bolts. The batten does not close down to the lower edge of the door, it being left up a little to admit a bar, so that the door may be pried up when stuck by the weight of grain behind it becoming settled in transportation.

What Mr. Senour claims for his invention is superior ease of management as compared with any similar service, it being impossible for a car provided with it to become packed so as to require more than a moment to open it. Moreover, shoveling grain away from the door can never become a necessity where this invention is used.

W. P. Senour resides at Pimento, Vigo County, Indiana.

Snow Excavator.

MINNESOTA, very aptly, is the birthplace of this device, which is the invention of Danthus P. Bier and Henry E. Ralph, of Marshall, in that State, assignors of one-third to Henry M. Burchard, land agent of the Winona & St. Peter Railway Company, and also resident in Marshall.

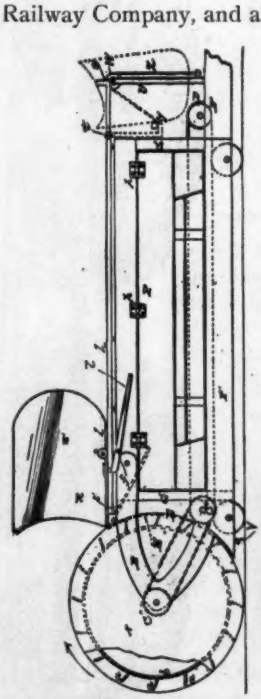


FIG. 1.

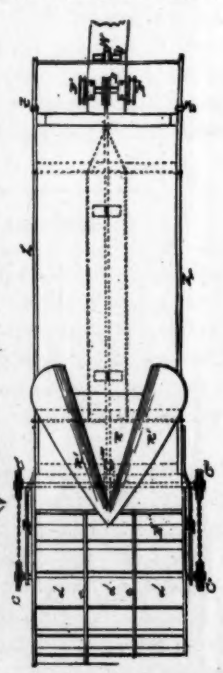


FIG. 2.

Fig. 1 is a side view of the excavator; Fig. 2, a top view, Fig. 3, a rear view, and Fig. 4, a cross sectional view.

Briefly described, this snow-cleaning machine is the

combination, with the rotating cutting-out drum A, in front, of a raised adjustable deflector in rear of the upper portion thereof, and supported on rails of a car or receptacle having centrally-hinged bottom sections and swinging sides. The elevated adjustable deflector before mentioned, has roller bearings engaging a ⊂-shaped track, having a hinged end portion in rear, and devices for lowering said end portion when the deflector is adjusted upon it. Its operation is to clean snow from railway tracks by scattering it in a pulverized or fine and loose condition. The reader will be interested in following the annexed detailed description of this important invention, which is easily done with the assistance of the cuts.

The letters F′ F′ designate the horizontal bars of the frame, and G′ G′ the uprights. The frame is designed to be supported upon suitable wheels, to enable it to be moved readily along the track.

A designates a large metallic drum flanged at each side, and having between the flanges the transverse cutters or scrapers *a a*, of curved shape, arranged somewhat like the

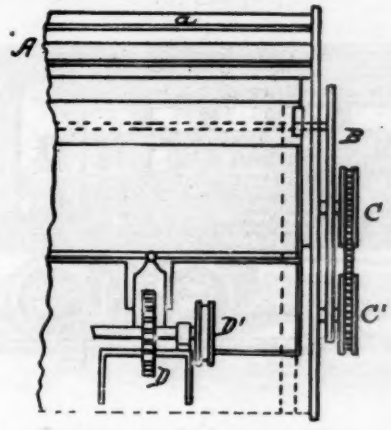


FIG. 3.

buckets of a water-wheel. The wheel or drum is also provided with circumferential intermediate flanges, *c*, subdividing the pockets *d*. Around the outside frame-work of the wheel is arranged a shell or casing, *b*, preferably of boiler iron. The buckets or pockets *d d* of the wheel form receptacles for the snow taken up by the cutters. The drum A is supported by the arms B B, which extend from the main frame. At the ends of the drum-shaft are the sprocket-wheels C and C″, driven from the sprocket-wheels C′ and C‴ by chains. On the shaft of the sprocket-wheels C′ and C‴ is secured a central sprocket-wheel, C⁗, which is driven by a chain from the sprocket-wheel D at the rear end of the machine. The wheel D and its shaft and the pulley D′ thereon are driven by an engine on a platform-car in rear of the machine.

E represents a shield or apron at the front end of the machine, between the frame and the drum A. Starting from a point near the track, this apron extends upward around the rear of the drum to the point or nose of the deflector R, and then is bent back at a sharp angle. It is designed to act as a guard to keep the snow from getting into the machine. The deflector R is of angular form, having two lateral wings, R′ R′, which extend rearwardly and outwardly, and are curved in concave form from above and below on their outer sides. It is arranged in elevated position back of the upper portion of the drum, and is designed to scatter the snow laterally, as it is thrown against the deflecting sides thereof by the action of the drum. The deflector is supported on the longitudinal ⊂-shaped rails *h h*, which are secured to the upper portions of the sides of the frame. The deflector is provided with friction-wheels *s s′*, whereof the wheels *s s* run on the top of the track-rails *h h*, and the wheels *s′ s′* run under the flanges thereof. The sides P of the car are hinged at their upper edges, as at *p p*, to open outward at the bottom. The car is provided with a falling bottom consisting of two portions, L L′, hinged centrally to a support, as at *m m*, so that the bottom sections open by falling downward and inward at their outer portions. The cen-

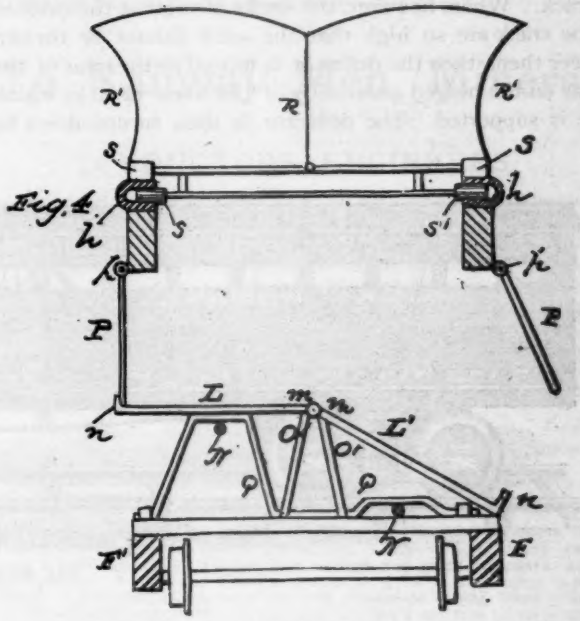


FIG. 4.

ter standards, O′ O′, to which the bottom sections are hinged, are made centrally open, to provide for the passage of the long central operating chain. The outer edges of the bottom sections, L L′, are provided with catch-lugs or upwardly-turned ears *n*, which are designed to engage the lower edges of the hinged sides P, and serve to hold them securely in position when the bottom sections are raised in horizontal position. The bottom sections are held in horizontal position by means of crank shafts Q Q and longitudinal rods N N, connected to a chain or chains and mechanicism attached to the operative parts of the engine. These devices are controlled by means of a lever. When the tension on the crank shafts is relieved, these supports fall into horizontal position, and the bottom sections are allowed to drop at each side, releasing the hinged sides P, so that they can swing outward, if necessary.

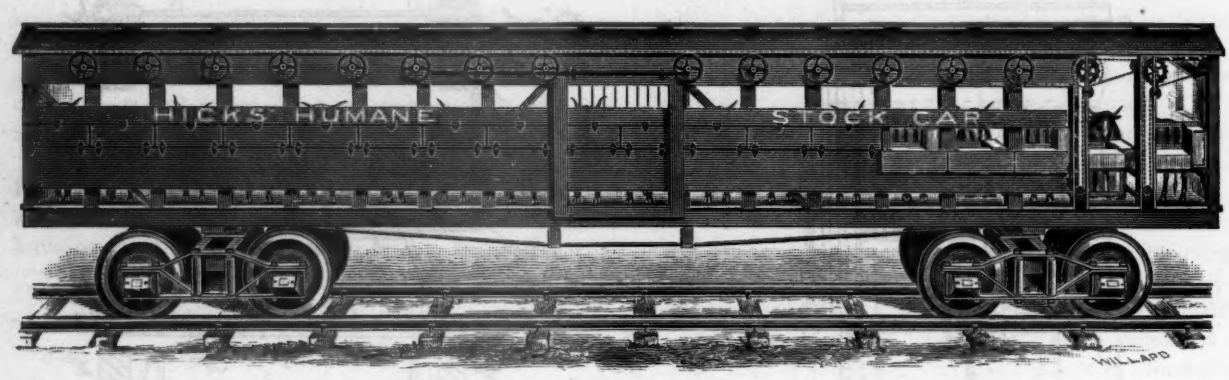
A lever *l* pivoted to the frame at *f*, is used to hold the deflector R securely to the track. The lever is held in its position by means of a ratchet and spring-catch.

At the end of the car is arranged a pair of upright posts, U which support at their upper ends a pulley W, over which runs a chain Z, which is attached to the end

of the track at *y*. This rear end portion of the track is hinged to the main track *h* at *t*, and is designed to be turned downward when the deflector is moved to the rear thereon, so that said deflector will be out of the way.

V indicates a small steel spring rail clearer, which is secured to the lower portion of the frame of the machine on each side, just over the railway rails.

The working of the machine is as follows: In order to clear the track of any ordinary drift, the machine is pushed into the bank or drift, the drum A being revolved in the direction indicated by the arrows at a high rate of speed. As the drum revolves, it cuts out the snow and throws it over backward against the deflector R with great force. The masses of snow are divided by the front angle of the deflector, and the sides of the latter cause it to be scattered to a considerable distance on each side of the track. When, however, the banks of snow at the sides of the track are so high that the snow cannot be thrown over them, then the deflector is moved to the rear of the car on the hinged portions *y* of the track rails, by which it is supported. The deflector is then turned down by lowering the end portion *y*, of the track. The bottom sections of the car are then raised in horizontal position, engaging the sides P thereof, and thereby a receptacle or box is formed, into which the snow is driven by the drum A. When the box is full, the machine is moved back to a place where there are no banks on either side of the track. Then the bottom sections of the box are allowed to fall, and the snow is discharged on either side of the track. The bottom of the car is then raised again, and the machine is pushed back into the bank for a fresh load.



THE HICKS STOCK CAR.

The Hicks Stock Car.

HENRY C. HICKS, East Minneapolis, Minnesota, has been occupied many years in the endeavor to devise a stock car which can be turned from a stock to a miscellaneous freight car, and again to a stock car. The invention, of which we give an illustrated description, is the result of his prolonged cogitations and numerous experiments.

He claims that it will suit the railroad men, for it can be handled quickly, and is adapted for all kinds of merchandise as well as for stock; will suit the shippers of stock, it can be so easily loaded and unloaded, watering and feeding are convenient, and rapid transit can be had, so that shrinkage will be small; and will suit the public at large, for the stock can have comfortable stalls and efficient apparatus for watering and feeding.

The stall bars are stout, light and flexible, are attached

FIG. 1.

to endless chains *J*, driven by a sprocket wheel *D*, having a hand wheel *F*. This arrangement gives the endless chains *J* and stall bars *C* a positive motion; so that if in loading the stock, they are close together, the stall bars can be forced down or up between each one as desired. The arrangement for feeding and watering is simple in construction and efficient in its work. Water cup *B* and water tank *A* are so made that when the stock drinks water cup *B* dry, it empties water tank *A*, then to fold up water cup *B* it empties the cup and tank as in *Fig 1*. The mangers or feed boxes *E* can be operated from the outside of the car, also water cup. The corners of the mangers

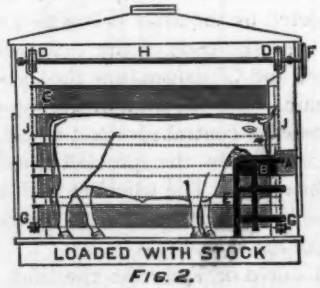


FIG. 2.

will be made from angle iron, so that the front and sides can be riveted or bolted to them. Mangers can be made open at sides and front or tight, with or without bottoms. The mangers are so constructed as to form a shield to the watering arrangement, either up or down. All of the mechanism is operated from the outside of car, so that wild stock can be as readily handled as domestic. When the car is to be loaded the central door is opened

as in an ordinary car; the door is then closed. The mangers water cups, and stalls are put in position at the loader's time and pleasure. To unload, the mangers are drawn in, the stalls raised, the central door opened, and the stock driven out. The inventor's patents are dated April 19th, 1881, June 11th, 1883, July 10th, 1883, and Nov. 13th, 1883.

New Railroad Gate.

THE railroad gate invented by George A. Hall, of Portland, Maine, is opened and closed by a spring, which can be made to shut the gate when it is open, and open it when it is shut. It can be set to operate rapidly or slowly, and can be set in a ditch of water without affecting its movements. There is no danger from rain, frost or snow, as all parts of it, except the arm, are encased in a cast-iron enclosure. As a hand gate it can be used at a distance of half a mile or as fast as a wire can be worked, and where several gates are in one vicinity they may be all managed by one man. One single pull is sufficient to either open or shut it. When it is shut it is locked, when it is open it is locked, and the pull to start it unlocks it. A gong is sounded before it starts, and rings all the way down. The cost will be about one-half of the Hall gate now so generally used. As an automatic gate it can be worked by the engine either in backing or going, on single or double track, and on one or both sides of it.

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